

A

PATENT

Preliminary Classification:

Proposed Class: 52

Subclass: 800.12

NOTE: *All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'*" M.P.E.P. § 601, 7th ed.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s):

Lee W. Mueller

WARNING: 37 C.F.R. § 1.41(a)(1) points out:

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title):

PRE-ASSEMBLED INTERNAL SHEAL PANEL

CERTIFICATION UNDER 37 C.F.R. § 1.10*

(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date June 23, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL631839175, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Charles R. Cypher

(type or print name of person mailing paper)

Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

*"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

(New Application Transmittal [4-1]—page 1 of 11)

1. Type of Application

This new application is for a(n)

(check one applicable item below)

- ☐ Original (nonprovisional)
- ☐ Design
- ☐ Plant

WARNING: Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

WARNING: Do not use this transmittal for the filing of a provisional application.

NOTE: If one of the following 3 items apply, then complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED** and a **NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION**.

- ☐ Divisional.
- ☒ Continuation.
- ☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

NOTE: A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:

- (i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or
- (ii) Complete as set forth in § 1.51(b); or
- (iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or
- (iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(f) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

WARNING: If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application must be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

- ☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

18 Pages of specification

7 Pages of claims

9 Sheets of drawing

WARNING: DO NOT submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c).

(complete the following, if applicable)

- ☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).

☐ formal

☒ informal

B. Other Papers Enclosed

35 Pages of declaration and power of attorney

1 Pages of abstract

Other

4. Additional papers enclosed

☒ Amendment to claims

☒ Cancel in this applications claims 7, 8, 9, 15, 16, 17, 18, 19, 20²¹ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☒ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

☒ Preliminary Amendment

☐ Information Disclosure Statement (37 C.F.R. § 1.98)

☐ Form PTO-1449 (PTO/SB/08A and 08B)

☐ Citations

- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.
- ☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative
- ☐ Special Comments
- ☐ Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)-(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)-(4).

NOTE: "The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.62, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(f) is filed supplying or changing the name or names of the inventor or inventors." 37 C.F.R. § 1.41(a)(1).

- ☒ Enclosed (copy from the parent application)

Executed by

(check all applicable boxes)

- ☒ Inventor(s).
- ☐ legal representative of inventor(s).
37 C.F.R. §§ 1.42 or 1.43.
- ☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.

- ☐ This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

- ☐ Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

- ☐ Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of all the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

- ☐ Showing that the filing is authorized.
(not required unless called into question. 37 C.F.R. § 1.41(d))

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

- ☒ The same.

or

- ☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,
☐ is submitted.
☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of \$130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

- ☒ English
☐ Non-English
☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

8. Assignment

- ☒ An assignment of the invention to Simpson Strong-Tie Co., Inc.
(Recorded on Oct. 8, 1999, Reel 10294 Frames 0065-0069, 5 pages)
☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.
☐ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters—one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

(New Application Transmittal [4-1]—page 5 of 11)

9. Certified Copy

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

- ☐ is (are) attached.
☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 C.F.R. § 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. § 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 C.F.R. § 1.16)A. ☒ Regular application

CLAIMS AS FILED			
Number filed	Number Extra	Rate	Basic Fee 37 C.F.R. § 1.16(a) \$ 690.00
Total			
Claims (37 C.F.R. § 1.16(c))	26 - 20 = 6	× \$ 18.00	108.00
Independent Claims (37 C.F.R. § 1.16(b))	5 - 3 = 2	× \$ 78.00	156.00
Multiple dependent claim(s), if any (37 C.F.R. § 1.16(d))		+ \$260.00	

- ☐ Amendment cancelling extra claims is enclosed.
☐ Amendment deleting multiple-dependencies is enclosed.
☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 C.F.R. § 1.16(d).

Filing Fee Calculation \$ 954.00

B. ☐ Design application
(\$310.00—37 C.F.R. § 1.16(f))

Filing Fee Calculation

\$ _____

- C. ☐ Plant application
(\$480.00—37 C.F.R. § 1.16(g))

Filing fee calculation

\$ _____

11. Small Entity Statement(s)

- ☐ Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent or includes a copy of the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

WARNING: "Small entity status must not be established when the person or persons signing the . . . statement can unequivocally make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).

(complete the following, if applicable)

- ☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

- 35 U.S.C. § ☐ 119(e),
☐ 120,
☐ 121,
☐ 365(c),

and which status as a small entity is still proper and desired.

- ☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of A, B or C above)

\$ _____

NOTE: Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

12. Request for International-Type Search (37 C.F.R. § 1.104(d))

(complete, if applicable)

- ☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

☐ Not Enclosed

☐ No filing fee is to be paid at this time.

(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)

☒ Enclosed

☒ Filing fee

\$ 954.00

☐ Recording assignment

(\$40.00; 37 C.F.R. § 1.21(h))

(See attached "COVER SHEET FOR
ASSIGNMENT ACCOMPANYING NEW
APPLICATION".)

\$ _____

☐ Petition fee for filing by other than all the
inventors or person on behalf of the inventor
where inventor refused to sign or cannot be
reached

(\$130.00; 37 C.F.R. §§ 1.47 and 1.17(l))

\$ _____

☐ For processing an application with a
specification in

a non-English language

(\$130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k))

\$ _____

☐ Processing and retention fee

(\$130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l))

\$ _____

☐ Fee for international-type search report

(\$40.00; 37 C.F.R. § 1.21(e))

\$ _____

NOTE: 37 C.F.R. § 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed

\$ 954.00

14. Method of Payment of Fees

☒ Check in the amount of \$ 954.00 ck. no. 5944

☐ Charge Account No. _____ in the amount of
\$ _____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

- ☒ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 03-4075.

☒ 37 C.F.R. § 1.16(a), (f) or (g) (filing fees)

☒ 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

☒ 37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)

☒ 37 C.F.R. § 1.17(a)(1)-(5) (extension fees pursuant to § 1.136(a)).

☒ 37 C.F.R. § 1.17 (application processing fees)

NOTE: ". . . A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . ." From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment


NOTE: "... Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

- ☒ Credit Account No. 03-4075
- ☐ Refund

Reg. No. 41694

Tel. No. (510) 832-4111

Customer No. 498



SIGNATURE OF PRACTITIONER

Charles R. Cypher

(type or print name of attorney)

405 14th Street, Suite 1607

P.O. Address

Oakland, CA 94612

☒ **Incorporation by reference of added pages**

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

- ☒ **Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed**

Number of pages added 6

- ☒ **Plus Added Pages for Papers Referred to in Item 4 Above**

Number of pages added 14

- ☐ **Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.**

Number of pages added _____

- ☐ **Plus "Assignment Cover Letter Accompanying New Application"**

Number of pages added _____

☐ **Statement Where No Further Pages Added**

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

- ☐ **This transmittal ends with this page.**

Practitioner's Docket No. SST/1070

PATENT

**ADDED PAGES FOR APPLICATION TRANSMITTAL WHERE BENEFIT OF
PRIOR U.S. APPLICATION(S) CLAIMED**

NOTE: See 37 C.F.R. § 1.78.

17. Relate Back

WARNING: If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

(complete the following, if applicable)

☒ Amend the specification by inserting, before the first line, the following sentence:

A. 35 U.S.C. § 119(e)

NOTE: "Any nonprovisional application claiming the benefit of one or more prior filed copending provisional applications must contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior provisional application, identifying it as a provisional application, and including the provisional application number (consisting of series code and serial number)." 37 C.F.R. § 1.78(a)(4).

☐ "This application claims the benefit of U.S. Provisional Application(s) No(s).:

APPLICATION NO(S).:

FILING DATE

_____/_____
_____/_____
_____/_____

_____"
_____"
_____"

B. 35 U.S.C. §§ 120, 121 and 365(c)

NOTE: "Except for a continued prosecution application filed under § 1.53(d), any nonprovisional application claiming the benefit of one or more prior filed copending nonprovisional applications or international applications designating the United States of America must contain or be amended to contain in the first sentence of the specification following the title a reference to each such prior application, identifying it by application number (consisting of the series code and serial number) or international application number and international filing date and indicating the relationship of the applications. . . . Cross-references to other related applications may be made when appropriate." (See § 1.14(a)). 37 C.F.R. § 1.78(a)(2).

- ☒ "This application is a
☒ continuation
☐ continuation-in-part
☐ divisional

of copending application(s)

- ☒ application number 08/ 985,479 filed on 12-5-97 "
☐ International Application _____ filed on _____
_____ and which designated the U.S."

NOTE: The proper reference to a prior filed PCT application that entered the U.S. national phase is the U.S. serial number and the filing date of the PCT application that designated the U.S.

NOTE: (1) Where the application being transmitted adds subject matter to the International Application, then the filing can be as a continuation-in-part or (2) if it is desired to do so for other reasons then the filing can be as a continuation.

NOTE: The deadline for entering the national phase in the U.S. for an international application was clarified in the Notice of April 28, 1987 (1079 O.G. 32 to 46) as follows:

"The Patent and Trademark Office considers the international application to be pending until the 22nd month from the priority date if the United States has been designated and no Demand for International Preliminary Examination has been filed prior to the expiration of the 19th month from the priority date and until the 32nd month from the priority date if a Demand for International Preliminary Examination which elected the United States of America has been filed prior to the expiration of the 19th month from the priority date, provided that a copy of the international application has been communicated to the Patent and Trademark Office within the 20 or 30 month period respectively. If a copy of the international application has not been communicated to the Patent and Trademark Office within the 20 or 30 month period respectively, the international application becomes abandoned as to the United States 20 or 30 months from the priority date respectively. These periods have been placed in the rules as paragraph (h) of § 1.494 and paragraph (i) of § 1.495. A continuing application under 35 U.S.C. 365(c) and 120 may be filed anytime during the pendency of the international application."

- ☐ "The nonprovisional application designated above, namely application _____ / _____, filed _____, claims the benefit of U.S. Provisional Application(s) No(s):

APPLICATION NO(S):

which is a continuation of

	FILING DATE
08 / 572,519	filed on 12-14-95 "
Now US Patent no. 5,706,126	"
	"

- ☐ Where more than one reference is made above, please combine all references into one sentence.

18. Relate Back—35 U.S.C. § 119 Priority Claim for Prior Application

The prior U.S. application(s), including any prior International Application designating the U.S., identified above in item 17B, in turn itself claim(s) foreign priority(ies) as follows:

Country	Appln. no.	Filed on
---------	------------	----------

The certified copy(ies) has (have)

- ☐ been filed on _____, in prior application 0 / _____, which was filed on _____.
- ☐ is (are) attached.

WARNING: The certified copy of the priority application that may have been communicated to the PTO by the International Bureau may not be relied on without any need to file a certified copy of the priority application in the continuing application. This is so because the certified copy of the priority application communicated by the International Bureau is placed in a folder and is not assigned a U.S. serial number unless the national stage is entered. Such folders are disposed of if the national stage is not entered. Therefore, such certified copies may not be available if needed later in the prosecution of a continuing application. An alternative would be to physically remove the priority documents from the folders and transfer them to the continuing application. The resources required to request transfer, retrieve the folders, make suitable record notations, transfer the certified copies, enter and make a record of such copies in the Continuing Application are substantial. Accordingly, the priority documents in folders of international applications that have not entered the national stage may not be relied on. Notice of April 28, 1987 (1079 O.G. 32 to 46).

19. Maintenance of Copendency of Prior Application

NOTE: The PTO finds it useful if a copy of the petition filed in the prior application extending the term for response is filed with the papers constituting the filing of the continuation application. Notice of November 5, 1985 (1060 O.G. 27).

A. ☐ Extension of time in prior application

(This item must be completed and the papers filed in the prior application, if the period set in the prior application has run.)

- ☐ A petition, fee and response extends the term in the pending prior application until _____.
- ☐ A copy of the petition filed in prior application is attached.

B. ☐ Conditional Petition for Extension of Time in Prior Application

(complete this item, if previous item not applicable)

- ☐ A conditional petition for extension of time is being filed in the pending prior application.
- ☐ A copy of the conditional petition filed in the prior application is attached.

20. Further Inventorship Statement Where Benefit of Prior Application(s) Claimed

(complete applicable item (a), (b) and/or (c) below)

- (a) ☒ This application discloses and claims only subject matter disclosed in the prior application whose particulars are set out above and the inventor(s) in this application are

☒ the same.

- ☐ less than those named in the prior application. It is requested that the following inventor(s) identified for the prior application be deleted:

(type name(s) of inventor(s) to be deleted)

- (b) ☐ This application discloses and claims additional disclosure by amendment and a new declaration or oath is being filed. With respect to the prior application, the inventor(s) in this application are

☐ the same.

- ☐ the following additional inventor(s) have been added:

(type name(s) of inventor(s) to be added)

- (c) The inventorship for all the claims in this application are

☒ the same.

- ☐ not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made

☐ is submitted.

☐ will be submitted.

21. Abandonment of Prior Application (if applicable)

- ☐ Please abandon the prior application at a time while the prior application is pending, or when the petition for extension of time or to revive in that application is granted, and when this application is granted a filing date, so as to make this application copending with said prior application.

NOTE: According to the Notice of May 13, 1983 (103, TMOG 6-7), the filing of a continuation or continuation-in-part application is a proper response with respect to a petition for extension of time or a petition to revive and should include the express abandonment of the prior application conditioned upon the granting of the petition and the granting of a filing date to the continuing application.

22. Petition for Suspension of Prosecution for the Time Necessary to File an Amendment

WARNING: "The claims of a new application may be finally rejected in the first Office action in those situations where (A) the new application is a continuing application of, or a substitute for, an earlier application, and (B) all the claims of the new application (1) are drawn to the same invention claimed in the earlier application, and (2) would have been properly finally rejected on the grounds of art of record in the next Office action if they had been entered in the earlier application." M.P.E.P., § 706.07(b), 7th ed.

NOTE: Where it is possible that the claims on file will give rise to a first action final for this continuation application and for some reason an amendment cannot be filed promptly (e.g., experimental data is being gathered) it may be desirable to file a petition for suspension of prosecution for the time necessary.

(check the next item, if applicable)

- ☐ There is provided herewith a Petition To Suspend Prosecution for the Time Necessary to File An Amendment (New Application Filed Concurrently)

23. Small Entity (37 C.F.R. § 1.28(a))

- ☐ Applicant has established small entity status by the filing of a statement in parent application / _____ on _____ .
- ☐ A copy of the statement previously filed is included.

WARNING: See 37 C.F.R. § 1.28(a).

WARNING: "Small entity status must not be established when the person or persons signing the . . . statement can unequivocally make the required self-certification." M.P.E.P., § 509.03, 7th ed. (emphasis added).

24. NOTIFICATION IN PARENT APPLICATION OF THIS FILING

- ☒ A notification of the filing of this
(check one of the following)
- ☒ continuation
 - ☐ continuation-in-part
 - ☐ divisional

is being filed in the parent application, from which this application claims priority under 35 U.S.C. § 120.

**ADDED PAGE(S) FOR APPLICATION TRANSMITTAL WHERE BENEFIT OF
A PRIOR U.S. APPLICATION CLAIMED**

25. The entire disclosure of the prior application from which an oath or declaration is supplied is considered a part of the disclosure of the accompanying continuation application and is hereby incorporated by reference.

26. Prior Application Information

Examiner: C. Smith

Group Art Unit : 2742

Added page 6 of 6

Practitioner's Docket No. SST/1070

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Lee W. Mueller/Simpson Strong-Tie Company, Inc.

Application No.: 0 /

Group No.:

Filed:

Examiner:

For: USPA CONTINUATION - PRE-ASSEMBLED INTERNAL SHEAR PANEL

10854 U.S. PTO

09/603727



Assistant Commissioner for Patents
Washington, D.C. 20231

EXPRESS MAIL CERTIFICATE

"Express Mail" label number EL631839175US

Date of Deposit June 23, 2000

I hereby state that the following attached paper or fee
New Application Transmittal (11p. ck.no. 5944)
Added pages to New Application Transmittal (6p)
Specification, Claims & Abstract (26p)
Power of Attorney (3p) *6/23/00* (5p)
Drawings (9p)
Preliminary Amendment (14p.)
Copy of Notification of Filing of Continued Application (2p)
RRC

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10, on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Charles R. Cypher

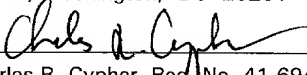
Typed or printed name of person mailing paper or fee

Signature of person mailing paper or fee

NOTE: The label number need not be placed on each page. It should, however, be placed on the first page of each separate document, such as, a new application, amendment, assignment, and transmittal letter for a fee, along with the certificate of mailing by "Express Mail." Although the label number may be on checks, such a practice is not required. In order not to deface formal drawings it is suggested that the label number be placed on the back of each formal drawing or the drawings be accompanied by a set of informal drawings on which the label number is placed.

(Express Mail Certificate [8-3])

1 "Express Mail" mailing label number EL631839175
I hereby certify that this paper or fee is being
deposited with the United States Postal Service
"Express Mail Post Office to Addressee" service
under 37 CFR 1.10 on the date indicated below
and is addressed to the Assistant Commissioner
for Patents, Washington, DC 20231

5 
Charles R. Cypher, Reg. No. 41,694
Date of Deposit: June 23, 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

10 In re patent application of:

Inventors/Assignors: Lee W. Mueller
Assignee: Simpson Strong-Tie Co., Inc.
Title: Pre-Assembled Internal Shear Panel
15 Attorney Docket No.: SST/1070

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
20 Washington, D.C. 20231

Sir:

In the specification:

On page 7, line 2, following the words "two vertical" add the words
25 --or side--;

On page 7, line 23, following the words "diaphragm member 110"
add --, which forms a brace member for the apparatus 100,--;

On page 12, line 23, following the words "130a and 130b" please add
the words --comprise an anchor point or an attachment point that--.

30 On page 14, line 33, please delete "4" and replace it with ---5---.

On page 16, line 27, after "gusset", please delete "162" and replace it
with ---164---.

On page 17, line 1, after "gusset", please delete "162b" and replace it
with ---164'---.

35 On page 17, line 2, after "to a", please delete "lower plate 196" and
replace it with ---floor space member 200---.

- 1 On page 17, line 7, after "floor space", please insert ---member---.
 On page 17, line 8, after "lower gusset", please delete "162b" and
 replace it with ---164'---.
 On page 17, line 12, after "width to the", please delete "lower plate
 5 196", and replace it with ---floor space member 200---.
 On page 17, line 14, after "panel", please delete "100b", and replace
 it with ---100a---.

In the claims:

- 10 Please cancel claims 7, 8 and 9. Please also cancel claims 15, 16, 17, 18,
 19, 20 and 21.

Please amend the claims as follows:

- 15 1. (Once amended) A pre-assembled apparatus for reducing the tendency of
 upper portions of walls to move with respect to [the] a foundation as a result
 of lateral forces applied in a direction parallel to the wall, said apparatus
 comprising:
 20 two vertically extending posts having both an upper and a lower
 end and defining a front and a back side, wherein said two vertically
 extending posts are positioned in a pre-selected spaced relationship;
 a horizontally extending upper member which is connected to
 said upper ends of said two vertically extending posts and wherein
 25 said horizontally extending upper member is configured to be
 connected to an upper portion of said wall;
 one or more brace members that interconnect said two vertically
 extending posts so as to maintain said vertically extending posts in
 said pre-selected spaced relationship when said apparatus is installed
 30 in a wall that is under shear stress from said lateral forces; and
 two attachment points which are respectively connected to said
 lower ends of said two vertically extending posts wherein said both of
 said two attachment points are configured to be attached to an anchor
 point that is anchored in said foundation of said building to thereby
 35 anchor said vertically extending posts to said anchor points, and
 wherein said apparatus is pre-assembled to allow for installation in said

1 wall by attaching said two attachment points to said anchor points
and connecting said upper member to said upper portion of said wall
so that said apparatus thereby reduces the tendency of said upper
portion to move relative said foundation.

5

4. (Once amended) The apparatus of Claim 3, wherein said apparatus
[reduces] is adapted to reduce the tendency of an upper portion of said wall
to move relative said foundation [resisting the] with respect to an uplift
force, said uplift force on [of] said wall occurring as a result of [said] an
10 overturn movement caused by said wall being exposed to said lateral forces.

6. (Once amended) The apparatus of Claim 5, wherein said two vertical
posts are approximately 7'-8" in height and said apparatus is less than 3 feet
in width and [is reducing] said apparatus is adapted to reduce the tendency
15 of said upper portion of said wall to move when said upper horizontal
member of said apparatus is connected to said upper portion of said wall,
said upper portion of said wall being formed with an upper plate, and when
said lateral forces cause said upper plate to move, causing motion, said
apparatus reduces said [the] motion of [an] said upper plate of said wall that
20 is connected to said upper horizontal member to approximately 0.5" of
deflection or less from a rest position when subjected to 3,500 lb. of said
lateral forces applied on said upper plate in [a] said direction parallel to said
horizontal upper member in a pseudo-cyclic shear testing.

25 10. (Once amended) An apparatus for reducing the tendency of an upper
portions of a wall[s] in a building to move with respect to [the] a foundation
as a result of lateral forces applied in a direction parallel to the wall, said
apparatus in combination with said wall comprising:

30 said wall, said wall having an upper plate, a lower plate, and
studs connecting said upper plate to said lower plate, said studs
supporting said upper plate;

said apparatus inserted within and connected to said wall, said
apparatus comprising

35 two vertically extending posts having both an upper end and a
lower end and defining a front and back side, wherein said two

1 vertically extending posts are positioned in a preselected spaced relationship;

at least one panel member interconnecting said two vertically extending posts substantially along the entire length of said posts;
5 [and]

two holdown bolts that are anchored in said foundation of said building; and

two attachment points which are respectively connected to said lower ends of said two vertically extending posts wherein said both of
10 said two attachment points are [configured to be] respectively attached to [a] said two holdown bolts [bolt that is anchored in said foundation of said building to thereby anchor said vertically extending posts to said foundation,] and wherein said apparatus is [configured to allow for installation in] connected to said wall by [attaching] said two attachment points attached to said holdown bolts and [connecting]
15 said upper [portion] end of said vertical posts attached to said upper [plate] portions of said wall so that said apparatus thereby reduces the tendency of said upper [plate] portions of said wall to move relative said foundation as a result of shear stress by transmitting said shear stress from said upper portions of said wall through said vertical
20 members and said at least one panel member to said anchor points and said holdown bolts positioned in said foundation, and wherein said posts and said panel of said apparatus for reducing the tendency of said wall to move are separate members from said studs, said upper plate and said lower plate of said wall.

11. (Once amended) The apparatus of Claim 10, further comprising:

an upper horizontal member that interconnects said upper portions of said two vertical posts, wherein connection between said
30 upper [portions] ends of said vertical posts is achieved by connecting said upper horizontal member to said upper [plate] ends of said vertical posts; and

a lower horizontal member that interconnects said lower [portions] ends of said two vertical posts, and wherein said upper horizontal and said lower horizontal members are separate members
35 from said upper plate and said lower plate of said wall.

1

12. (Once amended) The apparatus of Claim 11, wherein said one or more [planar] panel members is comprised of two [planar] panel members attached to said front and said back side of said two vertical posts and to said upper and lower horizontal members.

5

13. (Once amended) The apparatus of Claim 12, wherein said two attachment points are comprised of two brackets that are [configured to be] connected to said holdown bolts in said foundation, wherein said two brackets [are configured to] receive said lower horizontal member and said two vertical posts so that said lower horizontal member and said two posts can be fixedly attached to said brackets.

10

14. (Once amended) The apparatus of Claim 10, further comprising shear bolts mounted in said foundation and wherein said lower horizontal member is [configured to be] attached to said shear bolts mounted in said foundation to thereby reduce the likelihood of a lower portion of said [shear panel] apparatus becoming dislodged from said foundation in response to lateral forces applied to said wall.

15

20 Please add the following new claims:

-- 22. The apparatus of claim 10, where said apparatus is dimensioned so that a gap exists between said apparatus and said upper plate of said wall. --

25 -- 23. The apparatus of claim 10, wherein said panel of the apparatus is not directly connected to any of the studs, the upper plate or the lower plate of said wall. --

-- 24. The apparatus of claim 10, wherein said apparatus connects to said upper plate of said wall. --

30

-- 25. The apparatus of claim 11, wherein said panel does not extend beyond said upper horizontal member of said apparatus. --

35

1 -- 26. A method of building a wall so that the tendency of an upper portion
of a wall having an upper plate to move relative a lower portion of said wall
is reduced, said method comprising the steps of:

5 providing a foundation for said wall, wherein one or more
holdown bolts are each installed in said foundation at a pre-selected
location in said foundation;
mounting two or more studs so as to extend substantially
vertically upward from said foundation;
10 positioning an upper plate on a top surface of said two or more
studs;
attaching a lower portion of a shear reduction panel to said
holdown bolts so that said panel is positioned between said two studs,
said shear reduction panel being pre-assembled to have two vertical
15 posts, an upper horizontal member and a lower horizontal member
connecting said two vertical posts, and at least one panel
interconnecting said two vertical posts substantially along the vertical
lengths of said posts; and
attaching an upper portion of said shear reduction panel to said
20 upper plate of said wall so that movement of said upper plate of said
wall in response to lateral forces applied to said wall is reduced as a
result of the lateral forces being transmitted through the vertical posts
and the interconnecting panel to the holdown bolts mounted in the
foundation.

25 -- 27. The method of claim 26, wherein said panel does not extend beyond
said upper horizontal member of said apparatus. --

-- 28. The method of claim 26, wherein said pre-assembled shear reduction
panel is dimensioned so that a gap exists between said shear reduction panel
30 and said upper plate of said wall. --

-- 29. A method of building a wall so that the tendency of an upper portion
of a wall having an upper plate to move relative a lower portion of said wall
is reduced, said method comprising the steps of:

35

1 providing a foundation for said wall, wherein one or more
holdown bolts are each installed in said foundation at a pre-selected
location in said foundation;
mounting two or more studs so as to extend substantially
5 vertically upward from said foundation;
positioning an upper plate on a top surface of said two or more
studs;
attaching a lower portion of a shear reduction panel to said
holdown bolts so that said panel is positioned between said two studs,
10 said shear reduction panel being pre-assembled to have an upper
horizontal member and a lower horizontal member, and at least one
panel interconnecting said upper horizontal member and said lower
horizontal member; and
attaching an upper portion of said shear reduction panel to said
15 upper plate of said wall so that movement of said upper plate of said
wall in response to lateral forces applied to said wall is reduced as a
result of the lateral forces being transmitted through the vertical posts
and the interconnecting panel to the holdown bolts mounted in the
foundation. --

20 -- 30. The method of claim 29, wherein said panel has lips that extend
substantially perpendicular to the panel and then substantially parallel to the
panel. --

25 -- 31. The method of claim 30, wherein said upper and lower horizontal
members are U-shaped. --

-- 32. The method of claim 31, wherein said shear reduction panel further
comprises thick plates connected to said shear reduction panel where said
30 shear reduction panel connects to said holdown bolts. --

-- 33. An apparatus for reducing the tendency of an upper portion of a wall
in a building to move with respect to a foundation as a result of lateral forces
applied in a direction parallel to the wall, said apparatus in combination with
35 said wall comprising:

1 said wall, said wall having an upper plate, a lower plate, and
 studs connecting said upper plate to said lower plate, said studs
 supporting said upper plate;
 said apparatus inserted within and connected to said wall, said
 5 apparatus comprising
 upper and lower horizontal members, wherein said upper and
 lower horizontal members are positioned in a pre-selected spaced
 relationship;
 at least one panel member interconnecting said upper and lower
 10 horizontal members; and
 two holdown bolts that are anchored in a foundation of said
 wall, wherein said apparatus is attached to said two holdown bolts
 and wherein said apparatus is connected to said wall by said upper
 horizontal member attached to said upper portions of said wall so that
 15 said apparatus thereby reduces the tendency of said upper portion of
 said wall to move relative said foundation as a result of shear stress by
 transmitting said shear stress from said upper portion of said wall
 through said at least one panel member to said holdown bolts
 positioned in said foundation, and wherein said upper and said lower
 20 horizontal members and said panel of said apparatus for reducing the
 tendency of said wall to move are separate members from said studs,
 said upper plate and said lower plate of said wall. --

-- 34. The method of claim 33, wherein said panel has lips that extend
 25 substantially perpendicular to the panel and then substantially parallel to the
 panel. --

-- 35. The method of claim 34, wherein said upper and lower horizontal
 30 members are U-shaped. --

-- 36. The method of claim 35, wherein said apparatus further comprises
 thick plates connected to said shear reduction panel where said shear
 reduction panel connects to said holdown bolts. --

1

RemarksIntroduction

By these amendments claims 1 — 6, 10 — 14, and 22 — 36 are pending in the application. Claims 22 — 36 are presented for the first time.

- 5 Applicant hereby requests further examination and reconsideration of the application, in view of the above amendments.

The Specification

- Applicant has amended the specification at page 12, line 25, to
10 indicate that the brackets 130a and 130b comprise the anchor or attachment points that are mounted over two holdown bolts to thereby anchor or otherwise attach the lower end of the shear panel to the foundation of the building. Further, with respect to the use of the term “brace member”, Applicant has amended the specification on page 7, line 23, to indicate that
15 the diaphragm member 110 can form a brace member for the apparatus 100. With respect to the use of the word “stud”, Applicant submits that antecedent support for the use of this term was provided in the specification on page 12 at line 4.

- Applicant submits that the above-referenced amendments to the
20 specification result in the specification providing antecedent support for the terms used in the claims as filed. Applicant further submits that these amendments to the specification do not comprise the addition of any new matter to the application as antecedent support for the use of these terms was found in the claims as originally filed. Applicant notes that MPEP §
25 608.01(1) indicates that the originally filed claims can comprise a portion of the original disclosure and provide sufficient antecedent support for subsequent amendment to the specification.

- Applicant also seeks to correct a typographical error at page 14, line
33. No new matter is added by this amendment as it is obvious from the
30 specification that Applicant meant to refer to figure 5.

- Most of the remaining amendments correct mistakes made by the Applicant in the drafting of the specification. In the application as originally filed, Applicant had been inconsistent in the numbering of the gussets, the upper plate, and the shear panel. No new matter is added by these
35 amendments.

1 Finally, Applicant has amended the description in the "Preferred
Embodiment Section" relating to Figure 7 which shows the installation of
two shear panels 100a and 100b in a building. This description begins at
page 16, line 20 and ends at page 17, line 20. Applicant has changed the
5 description of the attachment of the upper shear panel 100b via the gusset
to a lower member. The specification, as originally filed, described the shear
panel as being connected to a lower plate 196 by means of the gusset.
However, figure 7, shows the shear panel 100b connected to different lower
member via the gusset, with the lower plate 196 compressed between the
10 shear panel 100b and the other lower member. That lower member was
originally designated "floor space 200". By this amendment, Applicant is
renaming that member "floor space member 200". No new matter is added
by these amendments, as support for this amendment is found in figure 7 as
originally filed.

15

Canceled Claims

Claims 7, 8 and 9 has been canceled to reduce the number of claims
present in the application. Applicant feels these claims are unnecessary,
since similar claims remain present in granted US Patent 5,706,626

20

Claims 15 — 21 have been canceled to reduce the number of claims
present in the application. Applicant feels these claim are unnecessary, since
similar claims remain present in granted US Patent 5,706,626.

Amendments to the Claims

25

With respect to claim 1, applicant has amended claim 1 so that in the
passage describing the "horizontally extending upper member" at lines 12
and 13, it is the horizontally extending upper member that is configured for
connection to an upper portion of said wall.

Also, with respect to claim 1, in the preamble, before the term
30 "foundation", Applicant has deleted "the" and inserted "a" to provide the
proper determiner for the first use of this term.

With respect to claim 4, applicant has changed claim 4 to provide
antecedent basis for the terms "the uplift force " and "said overturn
movement".

35

1 Also with respect to claim 4, Applicant has changed the claim to say
that "said apparatus is adapted to reduce the tendency of an upper portion of
said wall to move" to better define the scope of the claim.

With respect to claim 6, applicant has changed claim 6 to provide
5 antecedent basis for "the motion".

Also with respect to claim 6, Applicant has modified the claim so that
it cannot be construed as positively claiming the wall. Thus, the scope of the
claim is readily understood to be limited to the apparatus which is adapted to
reduce the tendency of the wall to move.

10 Applicant has also amended claim 6 to correct other antecedent basis
problems.

Claim 10 has been amended to provide the proper introduction for the
"wall" and the "foundation" in the preamble.

Claim 10 has also been amended to positively claim "the wall" into
15 which "the apparatus" is inserted, and so changes to the claim were
necessary to accord with the additions of these elements. For example, the
apparatus is no longer described as being "configured to allow for
installation" in the wall.

Claim 10 has been amended to positively claim "the wall" into which
20 the apparatus is inserted. This was done so that the relationship of the parts
can be more specifically defined, so that it is readily apparent that the
apparatus is a unit separate from the members of the wall. The wall is now
described as having "an upper plate, a lower plate, and studs connecting said
upper plate to said lower plate" The members of the apparatus are now
25 described as being "separate members from said studs, said upper plate and
said lower plate of said wall." No new matter is added by these
amendments. Support for describing the wall as having an upper plate, a
lower plate and studs, the studs connecting the upper plate to the lower
plate is found in figures 5, 6 and 7. Support for describing the members of
30 the apparatus as being separate members from the members of the wall is
also found in figures 5, 6 and 7.

Claim 10 has also been amended to provide antecedent basis for the
term "building".

In claim 10, in the preamble, at line 15, a typographical error has also
35 been corrected. An "r" has been inserted in "potions" to make the word
"portions".

1 Also with respect to claim 10, the apparatus is now described as
connecting to the "upper portion" of the wall rather than the "upper plate" of
the wall. No new matter is added by this change. Antecedent basis for the
term "upper portion" is provided in the preamble of claim 10.

5 With respect to claim 11, Applicant has replaced the description of the
vertical posts of the apparatus as having "upper portions" with "upper
ends". Antecedent basis for a vertical post with an upper end is found in
claim 10.

Also with respect to claim 11, Applicant has changed the wording to
10 describe the upper member as being connected to "said upper ends of said
vertical posts" in order to make the connection between the upper ends of
the vertical posts. Originally, the claims stated that this connection was
achieved by "connecting said upper horizontal member to said upper plate".
No new matter is added by this amendment. This amendment clarifies the
15 meaning of the claim as originally filed.

Finally, with respect to claim 11, Applicant has added that "said upper
horizontal and lower horizontal members are separate members from said
upper plate and said lower plate of said wall. Thus, claim 11 accords with
the similar amendment to claim 10.

20 With respect to claim 12, Applicant has replaced the descriptor
"planar" with "panel" to describe the brace members of the apparatus.
Antecedent basis is provided in claim 10 for "panel members."

With respect to claim 13, Applicant has changed the claim to reflect
the fact that the wall is now positively claimed in claim 10.

25 With respect to claim 14, it has been amended to reflect the fact that
the wall is now positively claimed in claim 10.

Also with respect to claim 14, "shear panel" has been replaced with
"apparatus" for which there is antecedent basis.

30 Other Amendments

Claim 10 has been amended by requiring that the apparatus have
"two holdown bolts that are anchored in said foundation of said building".
Claim 10 has also been amended by more specifically describing the
function of the apparatus as transmitting the shear stress from upper
35 portions of the wall through the vertical members and the panel member to
the anchor points and the holdown bolts positioned in the foundation. These

1 amendment were also made in prosecuting US Patent 5,706,626 to avoid
prior art cited by the examiner. No new matter is added by these
amendments. The "two holdown bolts" are described in the specification at
page 12, line 23. The specific function of the apparatus is described in the
5 specification at page 15, line 17.

New Claims

Applicant has also added new claims 22 — 36.

10 New claim 22 depends from claim 10. Claim 10 covers the apparatus
and the wall and the relationship of their parts. New claim 22, further
defines the relationship of the apparatus and the wall, describing the
existence of a gap between the apparatus and the upper plate of the wall.
Support for this claim is found in figures 4b, 5 and 7.

15 New claim 23 depends from claim 10. Claim 10 covers the apparatus
and the wall and the relationship of their parts. New claim 23, further
defines the relationship of the apparatus and the wall. Claim 23 requires that
the panel of the apparatus not be directly connected to the upper plate, the
lower plate or the studs of the wall. Support for this claim is found in figures
4b, 5 and 7.

20 New claim 24 depends from claim 10. Claim 10 covers the apparatus
and the wall and the relationship of their parts. Claim 24 describes the
apparatus as connecting to the upper plate of the wall. Support for this
claim is found in claim 10 as originally filed.

25 New claim 25 depends from claim 11, which depends from claim 10.
Claim 25 describes the panel as not extending beyond the upper horizontal
member. Support for this claim is found in figures 4b, 5 and 7.

30 New claim 26 is an independent claim. It is similar to original claim
15, except that it also describes the shear reduction panel as having upper
and lower horizontal members. Support for this claim is found in
originally-filed claims 15, 16 and 17.

New claim 27 depends from claim 26. It is similar to new claim 25.

New claim 28 depends from claim 26. It is similar to new claim 22.

New claim 29 is an independent method claim. It specifies that the
shear reduction panel is made with upper and lower horizontal members and
35 a panel. Support for this claim is found in figure 2c.

1 New claim 30 depends from claim 29. Claim 30 describes the panel as being formed with a lips that extend perpendicular to the panel and then parallel to the panel. Support for this claim is found in the specification at page 9, lines 31 — 36, and figure 2c.

5 New claim 31 depends from 30. Claim 31 describes the upper and lower horizontal members as being U-shaped. Support for this claim is found in the specification at page 10, line 7.

New claim 32 depends from claim 31. Claim 32 calls for thick plates to be connected to the shear reduction panel where the shear reduction panel connects to the holdown bolts. Support for this claim is found in figure 4a and in the specification at page 11, line 31.

New claim 33 is an independent apparatus claim. It specifies that the shear reduction panel is made with upper and lower horizontal members and a panel. Support for this claim is found in figure 2c.

15 New claim 34 depends from claim 33. Claim 34 describes the panel as being formed with a lips that extend perpendicular to the panel and then parallel to the panel. Support for this claim is found in the specification at page 9, lines 31 — 36, and figure 2c.

New claim 35 depends from 34. Claim 35 describes the upper and lower horizontal members as being U-shaped. Support for this claim is found in the specification at page 10, line 7.

New claim 36 depends from claim 35. Claim 36 calls for thick plates to be connected to the shear reduction panel where the shear reduction panel connects to the holdown bolts. Support for this claim is found in figure 4a and in the specification at page 11, line 31.

Respectfully submitted,

30

Reg. No. 41,694

Date: 6/23/00

35

By: Charles R. Cypher
Charles R. Cypher, Applicant's attorney
1607 Financial Center Building
405, 14th Street
Oakland, CA 94612-2747
Telephone: (510) 832-4111
Fax: (510) 832-4115

PRE-ASSEMBLED INTERNAL SHEAR PANEL

Background of the InventionField of the Invention

5 The present invention relates to an apparatus for reducing the risk of damage to buildings as a result of lateral forces applied to the building and, in particular, concerns a pre-assembled internal shear panel that can be installed into a building wall to reduce the risk of the building wall becoming dislodged from the foundation as a
10 result of lateral forces such as those generated in earthquakes and high winds.

Description of the Related Art

15 In typical building construction the walls are comprised of a frame that is anchored to the foundation and a covering that is installed onto the frame. Typically, the frame of a building has a number of vertically extending studs that are positioned between an upper and a lower plate. The lower plate is typically anchored to the foundation and the covering material, e.g., plywood, siding and the like, is
20 then nailed to the studs.

One problem that occurs in buildings is that lateral forces applied in a direction parallel to, and in the plane of, the wall can cause the upper section of the wall to move relative to the lower plate which is anchored to the
25 foundation. These forces often occur as a result of natural phenomenon such as high winds and earthquakes. It will be evident that too much movement of the upper sections of the wall relative to the anchored lower plate can result in damage to the frame of the wall which can further result in
30 the wall collapsing.

To address this particular problem, buildings are often equipped with a lateral bracing system. One type of lateral bracing system is known as shear panels that are installed in the walls to stiffen the structure against racking or
35 deformation in the plane the walls. For example, in the

typical residential building, wherein the frames are primarily constructed of wood, plywood sheathing is attached to three or more of the studs, and to the upper and lower plate of the wall, to inhibit the movement of the upper portion of the wall in response to these lateral forces. Specifically, the end studs of the shear panel or posts are typically fastened to a heavier anchor bolt, known as a holdown bolt, at a position adjacent to the end posts by means of various hardware types known as holdowns. The plywood, which forms a vertical diaphragm, is attached to the upper plate and the lower plate of the wall, and also to the posts with specified boundary fasteners such that the shear force is transmitted through the diaphragm to end posts, the holdown device, and bolt. Hence, the tendency of the upper portion of the wall to move relative the lower portion of the wall as a result of the shear forces is reduced. Basically, the plywood diaphragm creates diagonal braces that inhibit movement of the upper portion of the wall relative to the lower portion.

These shear panels are typically built in the field during the construction of the building. It will be appreciated that constructing these structures in the field can be time consuming and can also result in construction errors that will affect the strength of the wall.

Further, these types of shear panels and, in particular, the plywood shear panels used in wooden framed buildings, must be comparatively large to withstand the significant amount of lateral forces that are generated in large earthquakes. For example, most building codes limit the story drift or lateral deformation to $1/4$ " for an 8' wall height in all types of buildings. The ratio of the height of various shear panels to their width is also limited by the building code depending on the type of sheathing material used. To achieve this limitation on story drift in response to this applied lateral force, the shear panel must generally include a plywood diaphragm that is on the order of 2 to 4

feet in length. While on long walls there may be the space available between openings to position a 4-foot long or greater shear panel, in smaller buildings with smaller lengths of walls, there is often no room to construct a shear panel of this size. Further, it will be appreciated that multiple story buildings are more susceptible to larger lateral forces often necessitating even larger lateral bracing structures. This exacerbates the problem of a limited amount of space in walls of smaller lengths.

Hence, there is a need for a shear panel which is easy to install and is comparatively small in size so that it can be readily installed in walls having shorter lengths. To this end, there is a need for a prefabricated shear panel that is capable of ready installation into and between the studs of walls wherein the shear panel is capable of minimizing the movement of the upper portion of the wall relative to the lower portion to within an acceptable amount.

Summary of the Invention

The aforementioned needs are satisfied by the pre-assembled internal shear panel apparatus of the present invention which is comprised of two side members, or vertical posts that are spaced apart, and at least one diaphragm member that is positioned between, and connected to, the two side members. Further, there is an upper and lower member that is connected to the side members and the diaphragm member so as to form a rigid structure.

The lower member is positioned within a bracket member that is configured to be attached to a holdown bolt that is anchored in the foundation. There are two bracket members, one on each end, which are attached to one of the posts and both of the bracket members are also respectively connected to holdown bolts that are anchored in the foundation of the building.

The side, top and bottom members of the shear panel are all attached to form a preferably rectangular frame of which the upper member of the panel is connected to an upper plate

of the wall. This results in a shear panel capable of opposing lateral forces in the plane of the wall so as to reduce movement of the upper plate of the wall with respect to the lower plate.

5 In one preferred embodiment, the posts are formed out of a plurality of light gauge steel members and there are two sheets of sheet steel forming a diaphragm that are attached to both of the posts substantially along the full length of the posts and to the top and bottom frame members, with one
10 sheet on each side of the frame. Further, there is preferably at least one reinforcing member which interconnects the posts positioned between the upper and lower member and between the two sheets forming the diaphragm members. The reinforcing member stiffens the side members and reduces the tendency for the steel sheets to buckle when
15 the shear panel is under load.

The shear panel of the preferred embodiment is attached at the bottom corners to holdown bolts which are anchored in the foundation of the building and the bottom member of the
20 steel frame is fastened to the concrete foundation with a minimum of two anchor bolts or approved fasteners. The upper member of the shear panel of the preferred embodiment is connected to the upper plate of the frame of the wall so that lateral forces in the plane of the wall are transmitted to the shear panel. Because the lateral force is applied
25 through the top plate there is an overturning effect on the panel that is resisted by the end posts, holdown assembly and anchor bolts. The horizontal shear force is resisted by the additional anchor bolts or fasteners in the bottom frame members. In one preferred embodiment, a gusset is used to attach the upper member of the shear panel to the upper plate of the frame of the wall. Further, in the preferred
30 embodiment additional shear bolts are mounted through the lower member of the shear panel into the foundation of the building to reduce the likelihood that the shear panel will
35

become dismounted at the bottom end from the foundation as a result of shear forces applied against the wall.

The shear panel of the preferred embodiment is preferably shipped to the job site substantially assembled. The installer simply has to attach the mounting brackets to the holdown bolts that are anchored in the foundation and then position the lower member of the shear panel in the brackets. Subsequently, the installer has to secure the lower member of the shear panel to the brackets, and, hence, to the concrete foundation with cast-in-place anchor bolts or other approved fasteners. Subsequently, the remainder of the shear panel can be attached to the lower member. Further, the upper member of the shear panel can then be attached to an upper portion, e.g., the upper plates, of the wall. Hence, installation of the shear panel of the preferred embodiment is simplified over constructing an appropriate shear panel in the field during the construction of the building.

In addition, the configuration and metal construction of the shear panel of the preferred embodiment results in a shear panel that is capable of withstanding greater amounts of shear forces than the shear panel structures of the prior art. This allows the shear panel of the preferred embodiment to be smaller in size, e.g., have a smaller width, which allows the shear panel to be installed along smaller wall sections without a decrease in the amount of protection against lateral forces. These and other objects and features of the present invention will become more fully apparent from the following description and appended claims taken in conjunction with the accompanying drawings.

Brief Description of the Drawings

Figure 1 is a perspective view of one preferred embodiment of a shear panel;

Figure 2A is an exploded perspective assembly view of the shear panel shown in Figure 1;

Figure 2B is an exploded perspective assembly view of another embodiment of the shear panel shown in Figure 1;

Figure 2C is an exploded perspective assembly view of another embodiment of the shear panel shown in Figure 1;

5 Figure 3A is a sectional view of the shear panel shown in Figure 1 taken along the line A-A, in Figure 1;

Figure 3B is a sectional view of the shear panel shown in Figure 1 taken along the line B-B, in Figure 1;

10 Figure 4A is a sectional view of the shear panel of Figure 1 taken along the lines D-D in Figure 1;

Figure 4B is a sectional view of the shear panel of Figure 1 taken along the lines C-C in Figure 1;

15 Figure 5 is an elevation view of the shear panel of Figure 1 installed in a one-story wall of a building having wooden framing;

Figure 6 is an elevation view of the shear panel of Figure 1 that is modified so as to be installed in a one-story wall having steel framing; and

20 Figure 7 is a partial elevation view of two shear panels of Figure 1 installed on a two-story building.

Detailed Description of the Preferred Embodiment

Reference will now be made to the drawings wherein like numerals refer to like parts throughout. Figure 1 is a perspective view of a shear panel 100 of the preferred
25 embodiment that is used to reduce the relative motion of an upper section of a wall relative to a bottom section of a wall in response to lateral forces that project in a direction along the length of the wall. The construction of the preferred embodiments of the shear panel 100 will
30 initially be described in reference to Figures 1 - 4 and the installation and operation of the shear panel 100 of the preferred embodiments will be described in reference to Figures 5 - 7.

35 Referring initially to Figure 1, a shear panel 100 of the preferred embodiment is shown. Figure 1 illustrates the preferred configuration of the shear panel 100 in an

assembled form as it is shipped to the building site. The shear panel 100 includes two vertical posts 102a and 102b that preferably extend the height of a wall (not shown). Typically, in most residential construction, wall heights are either 7'-8" tall or 10' tall. The vertical posts 102a and 102b are thus approximately either 7'-8" or 10' tall depending upon the application. It will be appreciated from the following description that walls having different heights may also be braced using the shear panel of the present invention. For example some gables and walls having a pitch at the top equivalent to the roof pitch of the structure may be even higher than 10'. The shear panel of the preferred embodiment can be installed in these applications as well, necessitating the use of a 10' high panel.

The side posts 102a and 102b at their upper ends 103a and 103b respectively, are connected to a horizontal upper member 104. Similarly, the vertical posts 102a and 102b are connected at their respective lower ends 105a and 105b to a horizontal lower member 106. The interconnection between the posts 102a and 102b and the upper and lower members 104, 106 respectively is described in greater detail hereinbelow in reference to Figures 3A and 3B.

Further, at least one diaphragm member 110 extends between the vertical posts 102a and 102b substantially along the entire height of the vertical posts 102a and 102b and is also connected to the upper member 104 and the lower member 106. As will be described in greater detail hereinbelow, the diaphragm member serves to transmit a force in opposition to force exerted on the upper member 104 to the lower member 106.

Figure 2A illustrates the construction of the components of the shear panel 100 in greater detail. Specifically, the vertical post 102a in this embodiment is comprised of an inner retaining member 114 wherein two reinforcing members 116a and 116b are positioned inside of the inner retaining member 114. In the preferred embodiment, the inner retaining

member 114 is comprised of a piece of U-channel where the opening to the U-channel faces outward and the two pieces of reinforcing member 116a and 116b are comprised of two pieces of Cee-channel that are configured to be positioned within the inner retaining member 114 in the manner shown in Figure 3A.

As is also shown in Figures 2A and 3A, the two pieces of reinforcing Cee-channel 116a and 116b are positioned in the top portion of the inner retaining member 114. However, as shown in Figure 3B, in the bottom portion of the inner retaining member 114, there is a piece of reinforcing tube 126 that is stronger than the reinforcing members 116a and 116b. In the preferred embodiment, the reinforcing tube 126 is comprised of 8-inch thick steel tubing that is approximately 6" long and 2" x 3" in cross-section, which provides greater structural support for the bottom portion of the vertical posts 102a and 102b to minimize the tendency of the vertical posts 102a and 102b to bend in response to lateral forces applied to the upper portion of the shear panel 100. It will be appreciated that the Cee-channel reinforcing members can be replaced by the 1/8-inch thick steel tube along the full length of the inner retaining member 114 without departing from the spirit of the present invention.

In the preferred embodiment there are two diaphragm members 110a and 110b which are preferably comprised of sheet steel wherein each of the diaphragm members 110a and 110b have a lip 122 formed on a side of the diaphragm member 110. Preferably, as shown in Figure 3A, the lip 122 has approximately the same width as the opening on the U-channel comprising the inner retaining member 114. In the preferred embodiment, the diaphragm members 110a and 110b are positioned immediately adjacent the inner retaining member 114 so that the lip 122 on one of the diaphragm members 110a and 110b is positioned in front of an opening 115 to the U-channel comprising the retaining member 114. An outer

retaining member 120 is then positioned adjacent the diaphragm members 110a and 110b. In the preferred embodiment, the outer retaining member 120 is comprised of a length of U-channel member having an opening 121 that is slightly larger than the width of the inner retaining member 114 and the thickness of the two diaphragm members 110a and 110b.

Hence, the post 102a is comprised of an inner retaining member 114 that is reinforced by the reinforcing members 116 and the tube 126 positioned therein. The diaphragm members 110a and 110b are then positioned adjacent the inner retaining member 114 and captured within the outer retaining member 120.

As shown in Figures 1 and 3A, fasteners 124 are positioned along the entire height of the vertical posts 102a and 102b to securely interconnect the inner retaining member 114, the reinforcing members 116, the diaphragm members 110a and 110b and the outer retaining member 120. In the preferred embodiment, the fasteners 124 are comprised of screws wherein two screws are placed at approximately 4-inch intervals along the entire length of the vertical posts 102a and 102b between the upper member 104 and the lower member 106.

The foregoing description has described the preferred construction of the vertical post 102a, it will be appreciated that the vertical post 102b is constructed in an identical fashion as the vertical post 102a. Figures 2B and 2C illustrate alternate embodiments of the shear panel 100. In particular, Figure 2B illustrates a diaphragm member 110a' and 110b' having lips 122' extending along both of the outer edges of the panels 110a' and 110b'. Similarly, Figure 2C illustrates a diaphragm member 110b'' having a lip 122', like the lip shown in Figure 2b, may be used in combination with a diaphragm member 110a'' that has a lip 122'' which extends perpendicular to the plane of the member and then parallel to the plane of the member, thereby having a generally U-shaped

cross-section may also be used to securely interconnect the diaphragm member to the vertical posts. It will be appreciated that any number of different methods of interconnecting the diaphragm members to the posts may be used without departing from the spirit of the present invention.

As is also shown in Figure 2A, the upper member 104 and the lower member 106 are comprised of a U-channel that has a width which is approximately equal to the width of the outer retaining member 120 of the vertical posts 102a and 102b. As is shown in Figures 2A and 4B, the upper member 104 has a U-shape cross-section with an opening 146 wherein the upper end 103a of the post 102a is positioned within the opening 146. A plurality of fasteners 124 are then used to interconnect the post 102a to the upper member 104. In the embodiment shown in Figure 3B, the fasteners are comprised of screws. Further, the diaphragm members 110a and 110b are also positioned inside of the opening 146 of the upper member 104 and are attached, via screws, across the length of the upper member 104 in the manner shown in Figure 1.

The lower member 106 is also comprised of a piece of U-channel that has an opening 148 that is substantially equal to the thickness of the outer retaining member 120 of the vertical post 102a and 102b to thereby allow the vertical posts 102a and 102b to be positioned within the lower member 106 and secured thereto. In the embodiment shown in Figures 1 and 2, there are two brackets 130a and 130b that have openings for bolts that are configured to fit around the outer walls of the lower member 106. As is shown in Figure 1, the brackets 130a and 130b are mounted on the lower member 106 at the position where the vertical posts 102a and 102b are positioned within the lower member 106. A plurality of heavy duty fasteners 132, which in this embodiment are comprised of three bolts, are then screwed entirely through the brackets 130a and 130b, the lower member 106 and the vertical posts 102a and 102b to thereby securely attach the

posts 102a and 102b to the brackets 130a and 130b respectively, in the manner shown in Figure 4A.

As is also shown in Figure 2A, there are two reinforcing members 140 that interconnect the vertical posts 102a and 102b. Specifically, the reinforcing members 140 are preferably comprised of pieces of U-channel which are connected to the inner retaining member 114 on each of the vertical posts 102a and 102b. Preferably the reinforcing members 140 are positioned approximately 1/3 of the way from the top and the bottom of the shear panel 100.

In one preferred embodiment of the shear panel of the present invention, the reinforcing members 116 are comprised of two pieces of Cee-channel that is 1-1/2" x 2" wide, 18 gauge and approximately 7'-2" or 9'-6" in length. The inner retaining member 114 is comprised of 2-7/8" x 2-1/4" U-channel that is 18 gauge and is 7'-8" or 10' long depending upon the embodiment of the shear panel that is being fabricated. The diaphragm members 110a and 110b are preferably comprised of a sheet of 18 gauge steel that is 7'-8" or 10' long depending upon the application and 2' wide wherein the sheet is bent along one edge to form a 2" lip. The outer retaining member 120 is preferably comprised of 18 gauge U-channel that is 3" x 2" in cross-section and is either 7'-8" long or 10' long depending upon the application. The upper and bottom members 104 and 106 are comprised of 18 gauge U-track that is 5-13/16" x 2-3/8" in cross-section and is 1'-10" in length. The brackets 130a and 130b are preferably comprised of 1/8" thick steel that is 6-1/2" in height, 2-9/16" in width and 3" long. Further, along the side walls of the bracket there are three 1/2" holes drilled on both of the side walls. Further, there is a 2-9/16" x 3" x 1/2" thick plate 150 welded to the bottom of the bracket with a 1" hole in the center and 1/8" chamfers along the lower 3" edges.

The installation and operation of the shear panel 100 will now be described in reference to Figures 5 - 7. Figure

5 illustrates how the shear panel 100 is installed in a single story wall 168 of a building. In particular, the shear panel 100 is installed so as to extend between two of the vertical studs 160a and 160b of the wall. While in the preferred embodiment the shear panel is not directly attached to these studs 160a and 160b but is inset inside of them, it will be understood, however, that the shear panel 100 may, in some circumstances, be attached to the studs 160a and 160b using suitable fasteners to further enhance the ability of the wall to withstand shear forces.

The shear panel 100 is connected to an upper plate 162 of the wall structure, which in this embodiment is comprised of two 2" x 4" boards, via a gusset 164 in the manner shown in Figures 4B and 5. The gusset 164 is connected both to the upper plate 162 and to the upper member 104 of the shear panel 100 through the use of nails, screws, or other fasteners. In the preferred embodiment, a multiplicity of wood screws 152 (Figure 4B) is used to securely fasten the gusset 164 to the upper plate and a plurality of fasteners 124 is used to connect the gusset 164 to the upper member 104 of the shear panel 100.

At the lower end of the shear panel 100, the brackets 130a and 130b are mounted over two holdown bolts 166a and 166b that are anchored in the foundation 170 of the building. The holdown bolts 166 can either be previously anchored into the foundation 170 or they can be retrofitted into the foundation in the desired location using well-known methods. Generally, the holdown bolts 166 stub up through the upper surface of the foundation 170 and the brackets 130a and 130b can be positioned over the holdown bolts with the bolts extending through an opening 133 (Figure 4A) in the bottom of the bracket 130a and 130b. The brackets 130a and 130b can then be securely fastened to the holdown bolts 166 by tightening a nut 135 (Figure 4A) on top of the bolts against the reinforcing plate 150 on the bottom surface of the brackets 130a and 130b.

Subsequently, the lower member 106 can then be installed in the bracket and the vertical posts 102a and 102b can then be positioned within the lower member 106 at a position adjacent the brackets 130a and 130b so that the bolts 132 can be installed through the brackets 130a and 130b, the lower member 106 and the posts 102a and 102b to secure the posts 102a and 102b to the brackets 130a and 130b and thereby anchor the vertical posts 102a and 102b and the diaphragm members 110a and 110b forming the panel 100 to the foundation.

It will also be appreciated that it may be desirable to attach the shear panel 100 to one or more shear bolts 172 that are previously mounted in the foundation 170. The shear bolts 172 stub up out of the foundation 170 and holes can be drilled in the lower member 106 so that the lower member 106 can be positioned over the shear bolts 172 and then attached to the shear bolts via nuts. Further, it will be appreciated that spacers 174 (Figure 5) may preferably be positioned between the foundation 170 and the bottom surface of the lower member 106 in order to ensure that there is adequate attachment between the lower member 106 and the shear bolts 172 mounted in the foundation 170. As is also shown in Figure 5, the bottom plate 161 between the studs 160a and 160b is preferably removed prior to installation of the shear panel 100.

From the foregoing description, it will be understood that the shear panel 100 of the preferred embodiment is easy to install in the wall of a building. Specifically, the builder of the wall simply has to ensure that the holdown bolts 106 and the shear bolts 172 are positioned so as to be substantially co-planar with one of the two outer edges of the upper plate 162 of the frame. Subsequently, the brackets 130a and 130b can then be mounted on the holdown bolts in the previously described fashion and the lower member 106 can be connected to the shear bolts and positioned within the brackets 130a and 130b.

Subsequently, the remainder of the shear panel 100 can be installed in the lower member 106 and the bolts 132 can be installed to connect the vertical post 102a and 102b to the lower member 106 and the brackets 130a and 130b. Further, screws 124 along the lower member 106 can then be installed to interconnect the lower member 106 to the diaphragm members 110a and 110b. Once the shear panel 100 is connected to the foundation, the gusset 164 can then be connected to the upper member 104 and the upper plate of the wall. In the preferred embodiment, the shear panel 100 will preferably be shipped to the job site in substantially the configuration shown in Figure 1 and the workers will then detach the brackets 130a and 130b and the lower member 106 for installation to the foundation in the previously described manner.

It will be appreciated that installation of the shear panel 100 on the wall 168 reduces the tendency of the upper portion 180 of the wall 168 to move with respect to the foundation 170. Specifically, the arrows 182 and 184 are representative of lateral forces that are directed parallel to the length of the wall 168. It will be appreciated that when a lateral force in the direction of the arrow 182 is applied to the wall 168 the upper portion 180 of the wall 168 will have a tendency to pivot about the left-most holdown bolt 166a. However, the force in the direction of the arrow 182 is opposed by an equal and opposite force exerted on the right bottom corner of the shear panel 100 by the holdown bolt 166b thereby reducing the tendency of the shear panel to overturn. The shear bolts 172 prevent the panel and wall 168 from sliding in the direction of the arrow 182.

Basically, the gusset 164, the upper member 104, the diaphragm members 110a and 110b and the posts 102a and 102b provide a diagonally braced frame in each direction of the arrow 186 in Figure 4 which reduces the tendency of the upper portion 180 of the wall to move in the direction of the arrow 182. Similarly, when a shear force is directed parallel to the length of the wall 168 in the direction of the arrow 184,

the gusset 164, the upper member 104, the diaphragm members 110a and 110b and the posts 102a and 102b serve as a diagonal brace in the direction of the arrow 188 with the left-most holdown bolt 166a to oppose the tendency of the shear panel to overturn and the wall 180 to move in the direction of the arrow 184.

Hence, the shear panel 100 opposes the movement of the wall in directions which are parallel to the length of the wall and in the plane of the wall and, based upon pseudo-cyclic testing performed at the University of California, Irvine, in Irvine, California, a shear panel having the configuration of the preferred embodiment of the shear panel 100 is capable of withstanding up to 3500 lbs. of load applied to the upper portion 180 of a 7'-8" wall structure 168 while only having the upper portion of the wall deflect approximately 1/2" or less from its normal resting position.

Essentially, the shear panel 100 preferably functions like a large vertical cantilevered girder fixed at the bottom and loaded horizontally in the plane of the panel at the top member. The diaphragm members 110a and 110b resist the shear forces and the flanges of the girders are comprised of the post assemblies 102a and 102b which resist the axial stress due to bending. Preferably, the brackets 130a and 130b and the holdown bolts 166 are sized to withstand the uplift force generated by the overturning moment of the panel 100 when exposed to forces in the direction of the arrows 182 and 184, i.e., horizontal forces, and the shear bolts 172 are sized to resist the horizontal shear force. The reinforcing members 140 serve the purpose of reducing the tendency of the diaphragm members 110a and 110b to buckle under the loads generated by the shear forces. It will be appreciated that the shear panel 100 of the preferred embodiment is thus very easy to install and is capable of withstanding significantly more shear forces than the shear panels that are currently used in residential and business construction.

Figure 6 illustrates a modified version of the embodiment of the shear panel 100' wherein the shear panel 100' is configured to be installed in a steel framed wall 168'. It will be understood that both wood framed walls and steel framed walls are currently used in standard construction techniques and that the shear panels 100 and 100' can be used equally well with either type of construction. The only difference in the shear panel 100' from the shear panel 100 is that the dimensions of the shear panel may change as a result of the differences in framing spaces in the steel frame wall 168 and that the upper member 104 of the shear panel 100' can be bolted or screwed directly to a steel upper plate or track 162' of the wall 168' thereby avoiding the need of a gusset. Hence, it will be appreciated that the shear panel of the present invention can be installed equally well on both wood framed and steel framed walls and that the exact dimensions and configuration of the shear panel will, of course, vary depending upon the spacing of the studs in the wall and the height of the wall.

Figure 7 illustrates how two shear panels 100 of the preferred embodiment can be used to provide shear protection for two-story walls. In particular, two shear panels 100 are installed in the two-story wall 190 with the lower shear panel 100a being installed in the exact same manner as described before with reference to Figure 5. The upper shear panel is attached to an upper plate 192 of the two-story wall 190 with a gusset 162 in the same manner as described before in reference to Figure 5. At the bottom end, the vertical posts 102a and 102b and the lower member 106 are not positioned within brackets 130a and 130b but, in fact, are attached to metal straps 194, via the bolts 132, that are then connected to the upper member 106 of the lower shear panel 100. The bolts 132 are preferably connected to the posts 102a and 102b of the upper panel 100b in the same manner as described above in reference to Figure 4A.

Further, a gusset 162b can also be used to attach the lower member 106 of the upper shear panel 100 to a lower plate 196 of the two-story wall 190. The straps 194 firmly connect the bottom portion of the upper shear panel 100b to the top portion of the bottom shear panel 100a so that the upper panel 100b is anchored to the lower panel 100a across the floor space 200 between the two stories of the wall.

Further, the lower gusset 162b further reduces the tendency of the upper portion of the second story of the wall 190 to move with respect to the lower plate 196 of the second story of the wall as the shear panel is connected along its entire width to the lower plate 196 of the second story of the wall via the lower gusset 162b. Since the lower shear panel 100b is attached to the foundation in the manner described above in reference to Figure 5 and since the upper panel 100b is attached to the lower panel 100a via the straps 194, movement of the upper portion 190 of the second story of the wall 190 as a result of lateral forces being applied in a direction parallel to the wall, i.e., in the direction of the arrows 182 and 184, is reduced.

It will be appreciated that the previously described preferred embodiments of the shear panels are easy to install as a result of their prefabrication and provide excellent protection against shear forces that are acting in a direction parallel to the length of the wall. Specifically, the shear panel of the present invention uses two reinforced posts with an interconnecting diaphragm member to transfer the forces, resulting from a shear force being applied against the wall, to the holdown bolts that are embedded in the foundation. Since the panel is largely pre-fabricated, the worker simply has to connect the panel to the upper plate of the wall and then connect the lower portion of the panel to the holdown and shear bolts mounted in the foundation. Hence, it is simpler for the construction worker to install the shear panel and, since the panel is pre-fabricated, the possibility of field installation error, which would increase

the probability that the panel would not perform as intended, is of course reduced.

Further, since reinforced posts are used in conjunction with metal diaphragm sheets, the amount of shear force that can be transferred to the holdown bolts is increased. Specifically, using the shear panel constructed in the manner as the shear panels of the preferred embodiment, a shear panel that is only two feet in width can be used in the place of a shear panel structure fabricated out of plywood and the like that is over four feet in length. Hence, shear panels constructed according to the teachings of the preferred embodiment, e.g., with reinforced metal posts and with metal diaphragm members, can be used to provide protection against movement of the upper portions of walls relative to the foundations for walls that are short in length.

Although the preferred embodiment of the present invention has shown, described and pointed out the fundamental novel features of the invention as applied to these embodiments, it will be understood that various omissions, substitutions, and changes in the form of the detail of the device illustrated, may be made by those skilled in the art without departing from the spirit of the present invention. Consequently, the scope of the invention should not be limited to the foregoing discussion, but is to be defined by the appended claims.

WHAT IS CLAIMED IS:

1. A pre-assembled apparatus for reducing the tendency of upper portions of walls to move with respect to the foundation as a result of lateral forces applied in a direction parallel to the wall, said apparatus comprising:

two vertically extending posts having both an upper and a lower end and defining a front and a back side, wherein said two vertically extending posts are positioned in a pre-selected spaced relationship;

a horizontally extending upper member which is connected to said upper ends of said two vertically extending posts and is configured to be connected to an upper portion of said wall;

one or more brace members that interconnect said two vertically extending posts so as to maintain said vertically extending posts in said pre-selected spaced relationship when said apparatus is installed in a wall that is under shear stress from said lateral forces; and

two attachment points which are respectively connected to said lower ends of said two vertically extending posts wherein said both of said two attachment points are configured to be attached to an anchor point that is anchored in said foundation of said building to thereby anchor said vertically extending posts to said anchor points, and wherein said apparatus is pre-assembled to allow for installation in said wall by attaching said two attachment points to said anchor points and connecting said upper member to said upper portion of said wall so that said apparatus thereby reduces the tendency of said upper portion to move relative said foundation.

2. The apparatus of Claim 1, wherein said one or more brace members is comprised of two planar members attached to said front and said back side of said two vertical posts and to said upper horizontal member.

3. The apparatus of Claim 2, further comprising a lower horizontal member that is attached to said lower ends of said two vertical posts and wherein said two planar members are attached to said lower horizontal member.

5 4. The apparatus of Claim 3, wherein said apparatus reduces the tendency of an upper portion of said wall to move relative said foundation resisting the uplift force of said wall occurring as a result of said overturn movement caused by said wall being exposed to said lateral forces.

10 5. The apparatus of Claim 4, wherein said two vertical posts and said planar members are formed out of metal.

15 6. The apparatus of Claim 5, wherein said two vertical posts are approximately 7'-8" in height and said apparatus is less than 3 feet in width and is reducing the motion of an upper plate of said wall that is connected to said upper horizontal member to approximately 0.5" of deflection or less from a rest position when subjected to 3,500 lbs of lateral force applied on said upper plate in a direction parallel to said horizontal upper member in pseudo-cyclic shear testing.

20 7. The apparatus of Claim 1, wherein said two vertical posts are comprised of:

25 an inner retaining member having a U-shaped cross-section and having an opening and defining internal space inside of said inner retaining member extending substantially the full length of said inner retaining member;

30 one or more reinforcing members positioned within said internal space of said inner retaining member to provide reinforcement of said inner retaining member along said length of said member; and

35 an outer retaining member positioned so as to cover the opening defined by said U-shaped inner retaining member and to thereby retain said one or more reinforcing members within said internal space of said inner retaining member.

8. The apparatus of Claim 7, wherein said brace members are comprised of one or more planar members wherein said one or more planar members have a lip formed along one edge and wherein said lip of at least one of said one or more planar members is positioned between said inner retaining member and said outer retaining member adjacent said opening in said inner retaining member.

9. The apparatus of Claim 8, wherein a plurality of screws are inserted through said outer retaining member, said one or more planar members, said inner retaining member and said reinforcing members to securely fasten said planar members to said vertical post substantially along the entire length of said vertical post.

10. An apparatus for reducing the tendency of upper portions of walls to move with respect to the foundation as a result of lateral forces applied in a direction parallel to the wall, said apparatus comprising:

two vertically extending posts having both an upper end and a lower end and defining a front and back side, wherein said two vertically extending posts are positioned in a preselected spaced relationship;

at least one panel member interconnecting said two vertically extending posts substantially along the entire length of said posts; and

two attachment points which are respectively connected to said lower ends of said two vertically extending posts wherein said both of said two attachment points are configured to be attached to a holdown bolt that is anchored in said foundation of said building to thereby anchor said vertically extending posts to said foundation, and wherein said apparatus is configured to allow for installation in said wall by attaching said two attachment points to said holdown bolts and connecting said upper portion of said vertical posts to said upper plate so that said apparatus thereby reduces

the tendency of said upper plate of said wall to move relative said foundation.

11. The apparatus of Claim 10, further comprising:

an upper horizontal member that interconnects said upper portions of said two vertical posts, wherein connection between said upper portions of said vertical posts is achieved by connecting said upper horizontal member to said upper plate; and

a lower horizontal member that interconnects said lower portions of said two vertical posts.

12. The apparatus of Claim 11, wherein said one or more planar members is comprised of two planar members attached to said front and said back side of said two vertical posts and to said upper and lower horizontal members.

13. The apparatus of Claim 12, wherein said two attachment points are comprised of two brackets that are configured to be connected to said holdown bolts in said foundation, wherein said two brackets are configured to receive said lower horizontal member and said two vertical posts so that said lower horizontal member and said two vertical posts can be fixedly attached to said brackets.

14. The apparatus of Claim 13, wherein said lower horizontal member is configured to be attached to shear bolts mounted in said foundation to thereby reduce the likelihood of a lower portion of said shear panel becoming dislodged from said foundation in response to lateral forces applied to said wall.

15. A method of building a wall so that the tendency of an upper portion of a wall having an upper plate to move relative a lower portion of said wall is reduced, said method comprising the steps of:

providing a foundation for said wall, wherein one or more holdown bolts are installed in said foundation at a pre-selected locations in said foundation;

mounting two or more studs so as to extend substantially vertically upward from said foundation;

positioning an upper plate on a top surface of said two or more studs;

5 attaching a lower portion of a shear panel, that is pre-assembled to have two vertical posts and at least one panel interconnecting said two vertical posts substantially along the vertical lengths of said posts, to said holdown bolts so that said panel is positioned between said two studs; and

10 attaching an upper portion of said shear reduction panel to said upper plate of said wall so that movement of said upper plate of said wall in response to lateral forces applied to said wall is reduced.

15 16. The method of Claim 1, wherein the step of attaching a lower portion of a shear panel to said holdown bolt comprises:

 mounting a bracket on each of said holdown bolts and securing said bracket to said holdown bolt through use of a nut; and

20 positioning a lower horizontal member in said brackets, wherein said lower horizontal member has a U-shaped cross-section and wherein said vertically extending members are positioned within an opening in said lower horizontal members and wherein positioning said lower horizontal member in said brackets results in
25 a lower portion of said two vertically extending members being positioned adjacent said brackets; and

30 securing said brackets to said lower horizontal member and said vertically extending members by positioning at least one bolt through each of said brackets, said lower horizontal member and said vertical member and then tightening a nut to said at least one bolt.

35 17. The method of Claim 15, wherein the step of attaching said upper portion of said bracket to said upper portion of said wall comprises attaching a gusset plate to said upper plate and attaching said gusset plate to an upper

member of said shear panel that extends between said two vertically extending posts.

18. A method of reducing the tendency of a second story of a wall to move relative a foundation of said wall as a result of forces being applied to said wall, said method comprising the steps of:

attaching a first pre-assembled shear panel to a foundation of said wall wherein said first pre-assembled shear panel includes two vertically extending posts and at least one panel extending therebetween;

attaching an upper portion of said first pre-assembled shear panel to an upper plate of a first story of said wall so as to reduce the tendency of an upper portion of said first story of said wall to move relative said foundation in response to shear forces applied to said wall;

attaching a second pre-assembled shear panel, wherein said second pre-assembled shear panel includes two vertically extending posts and at least one panel extending therebetween, to a lower plate on said second story of said wall;

attaching an upper portion of said second pre-assembled shear panel to an upper plate on said second story of said wall; and

interconnecting said lower portion of said second pre-assembled shear panel to said upper portion of said first pre-assembled shear panel.

19. The method of Claim 18, wherein said step of attaching said lower portion of said first pre-assembled shear panel to said foundation comprises connecting said vertically extending members to said holdown bolts to thereby anchor said vertically extending members.

20. The method of Claim 19, wherein said step of attaching said upper portion of said first pre-assembled shear panel to said upper plate of said first story comprises attaching a gusset plate between said upper portion of said

first pre-assembled shear panel and said upper plate of said first story.

- 5 21. The method of Claim 20, wherein said step of attaching said upper portion of said second pre-assembled shear panel to said upper plate of said second story comprises attaching a gusset plate between said upper portion of said second pre-assembled shear panel and said upper plate of said second story.

10

PRE-ASSEMBLED INTERNAL SHEAR PANEL

Abstract of the Disclosure

5 An internal shear panel for reducing the tendency of the upper portions of buildings to move relative to the foundation when lateral forces, such as those produced by winds and earthquakes, are applied to the walls. The shear panel is pre-assembled having two vertical posts and two diaphragm members interconnecting the two vertical posts. The panel also has an upper and a lower horizontal member that are connected to the vertical posts and the diaphragm members. The lower horizontal member and the vertical posts are configured to be attached via brackets to holdown bolts mounted in the foundation of a building and the upper horizontal member is configured to be attached to an upper plate or rail of the wall. Hence, the shear panel can be installed by connecting the upper horizontal member to the upper portion of the wall and connecting the lower horizontal member to the holdown bolts in the foundation.

10

15

20

MHT-4813:lw
121195



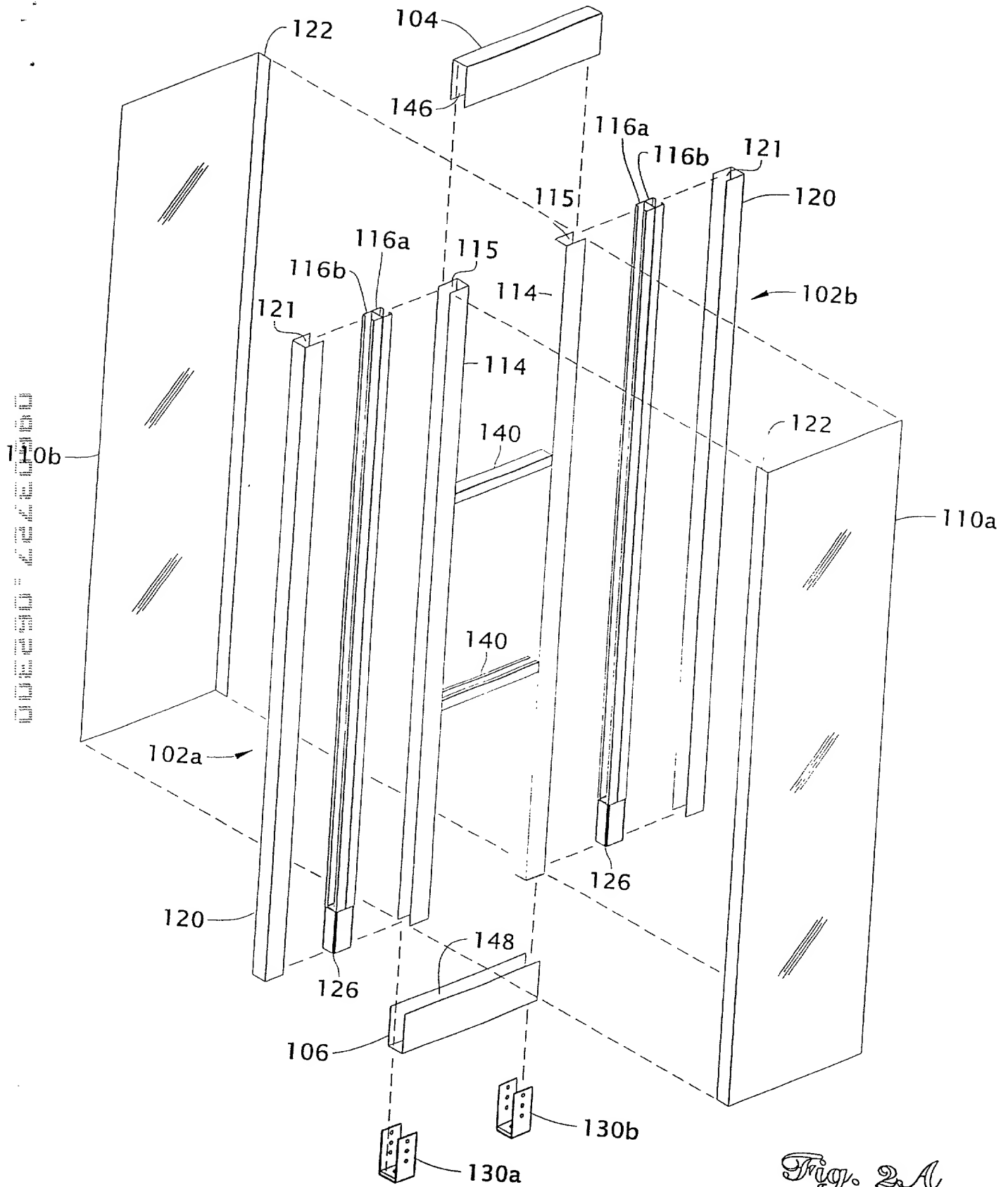


Fig. 2A

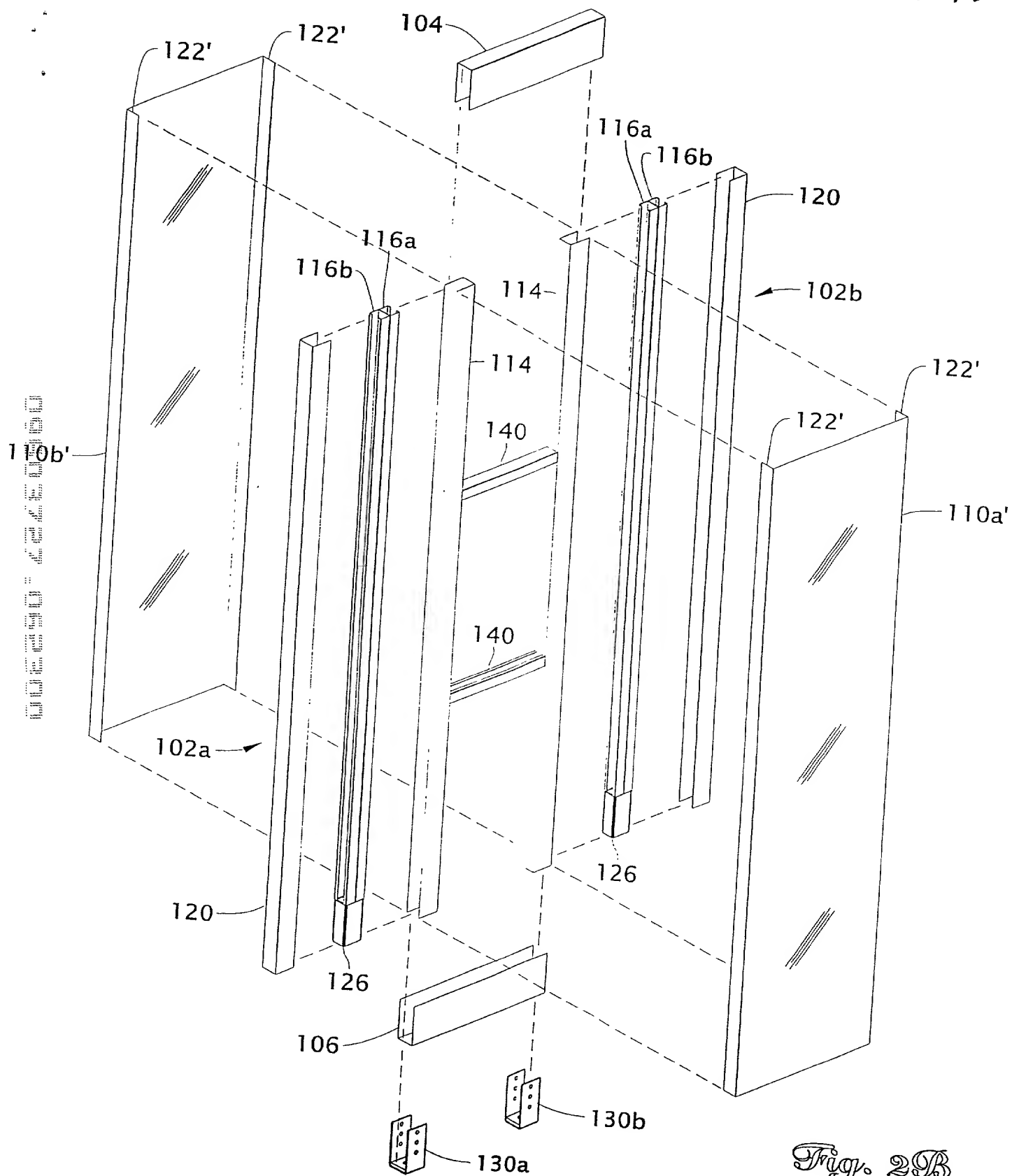


Fig. 2B

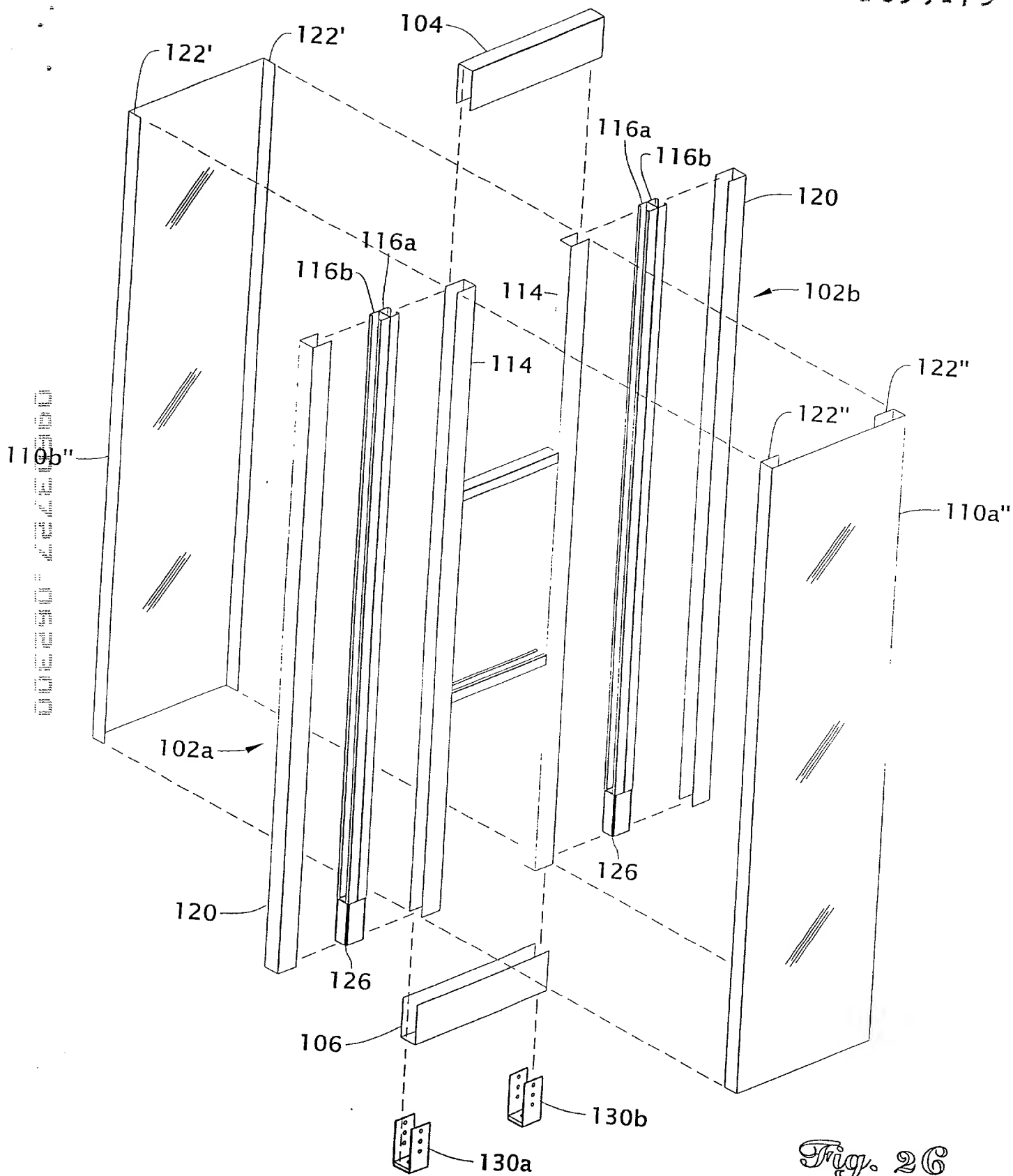


Fig. 26

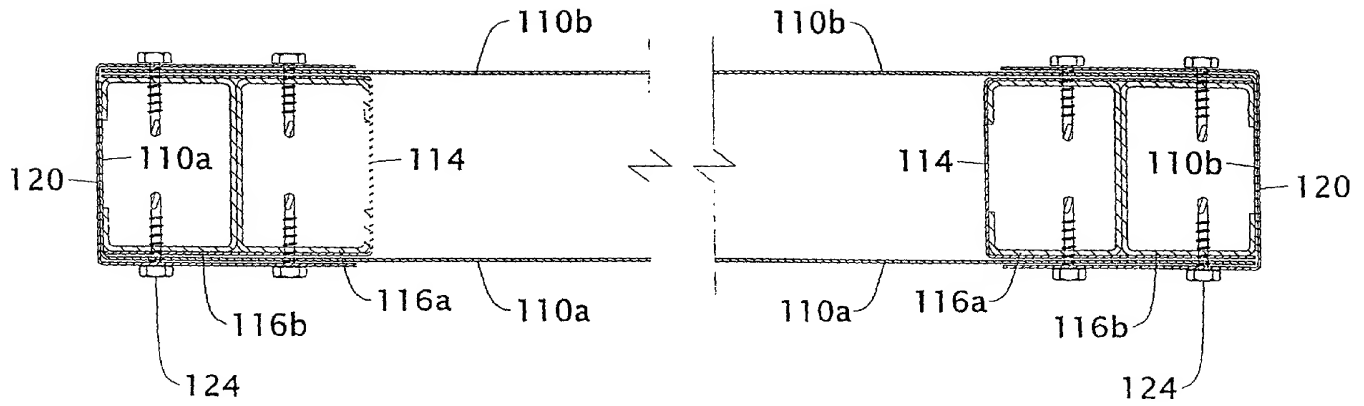


Fig. 3A

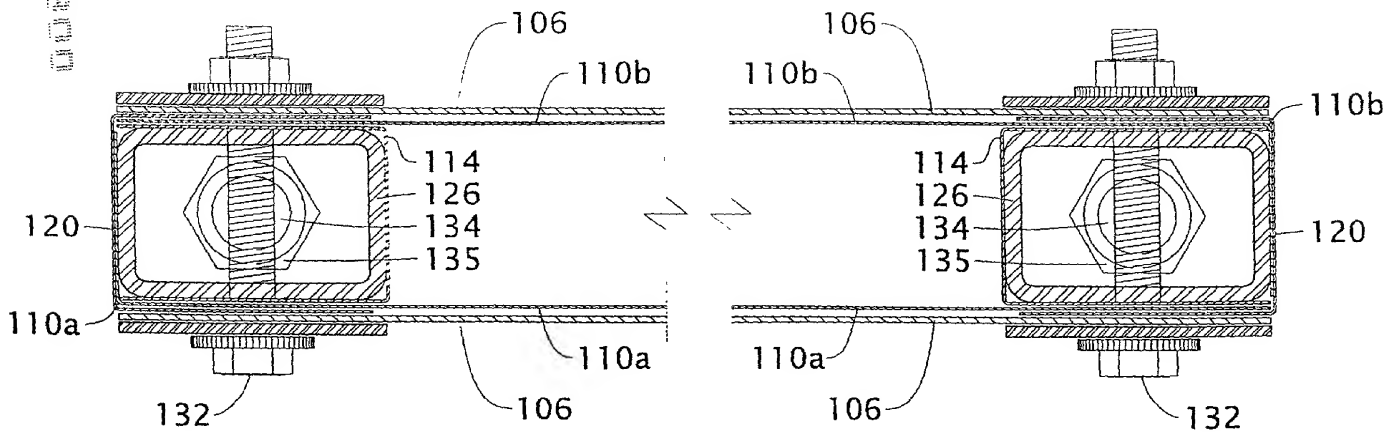


Fig. 3B

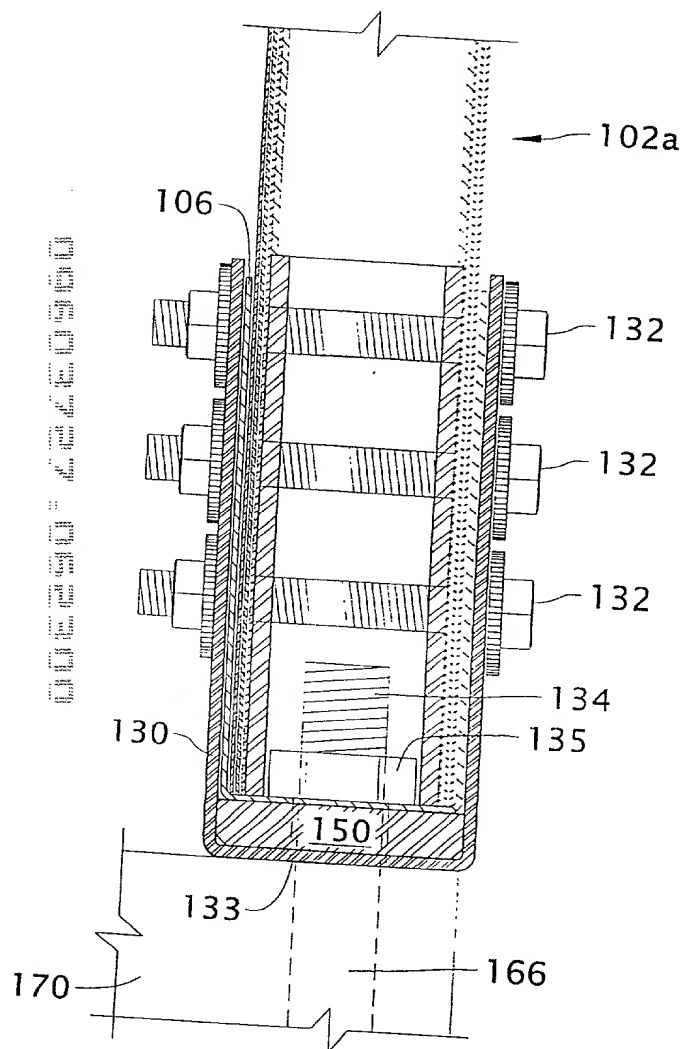


Fig. 4A

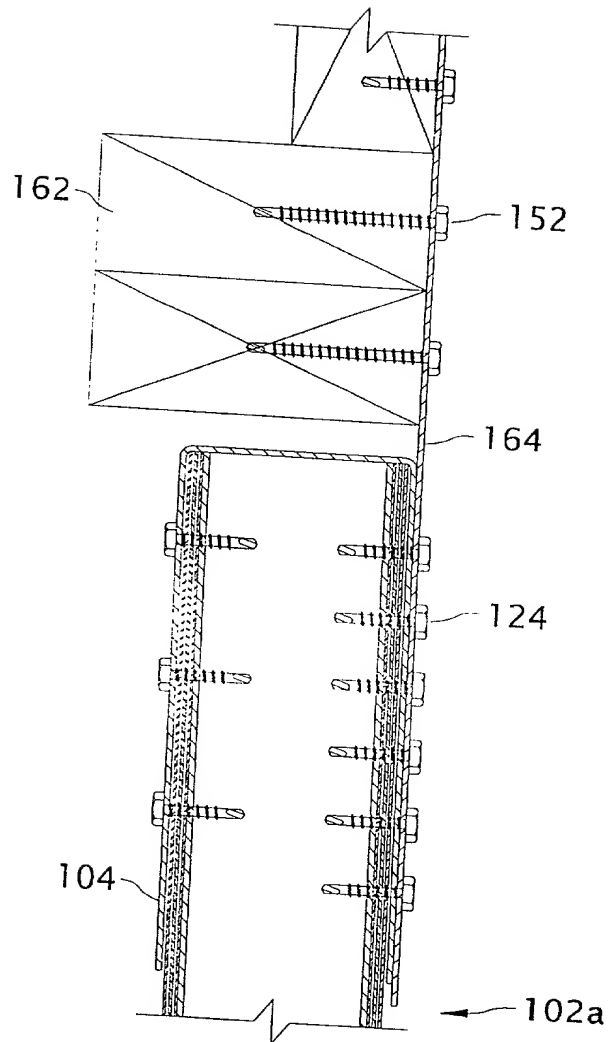


Fig. 4B

EL 631 839 175

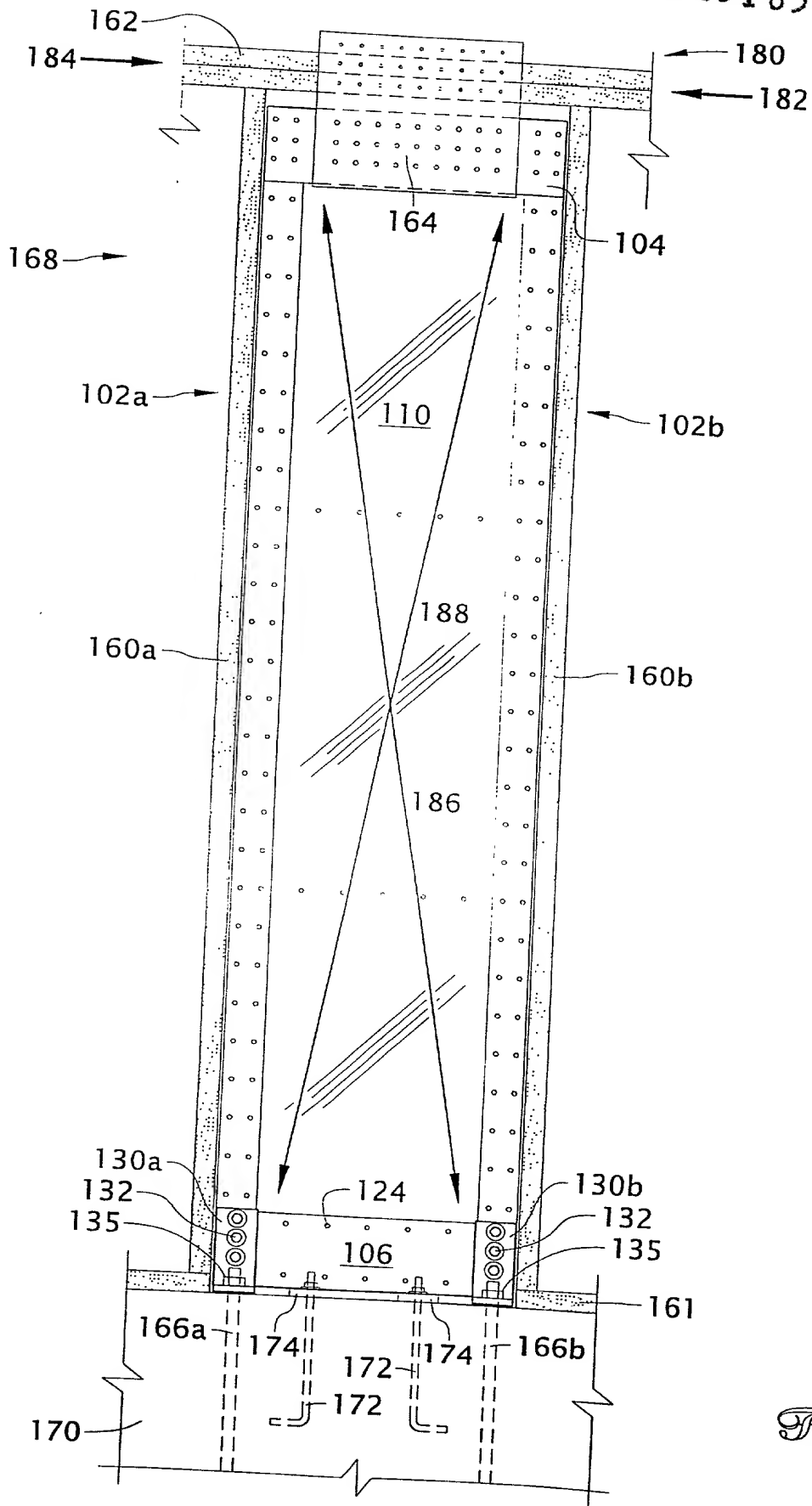


Fig. 5

EL631839175

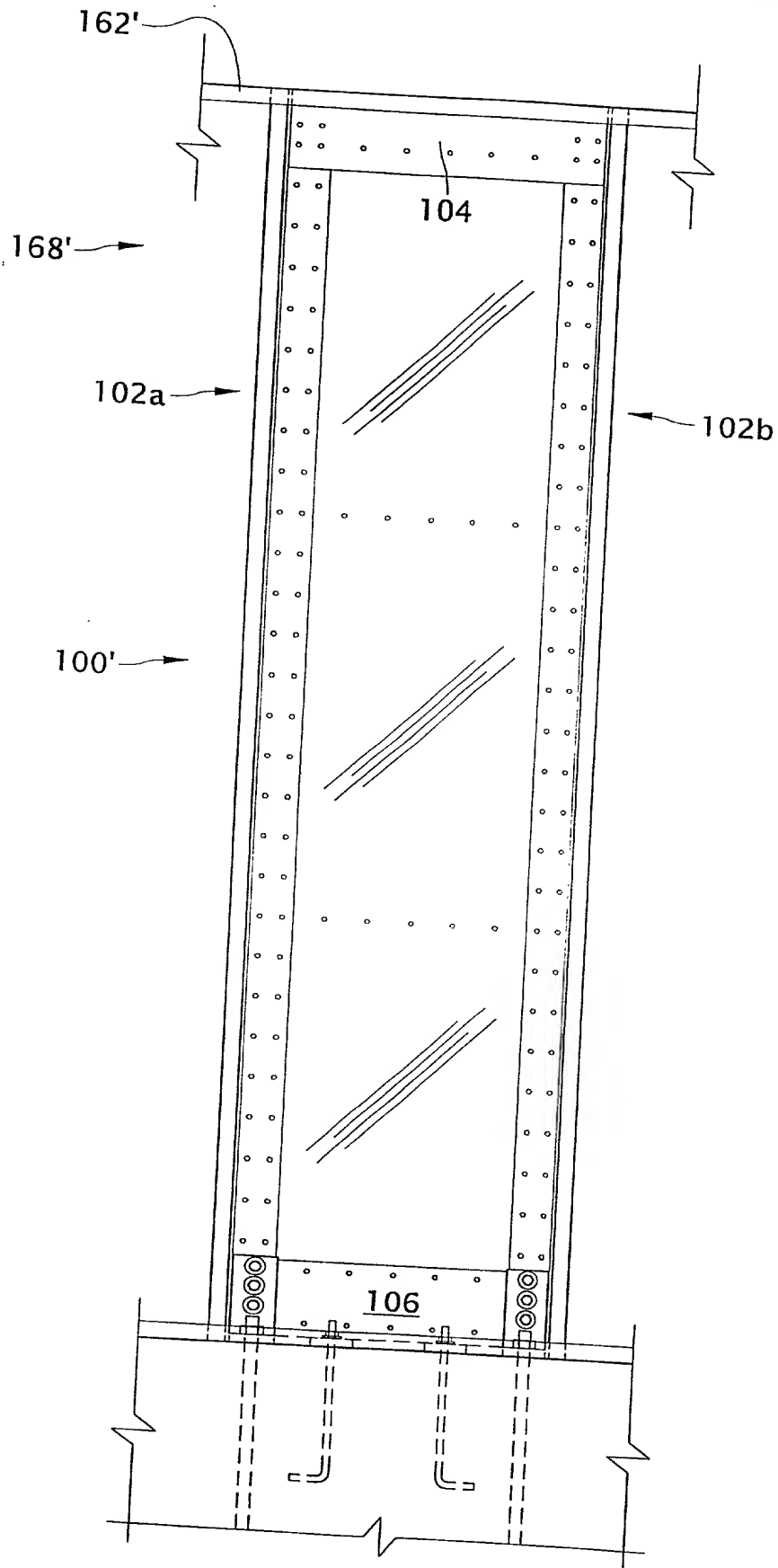


Fig. 6

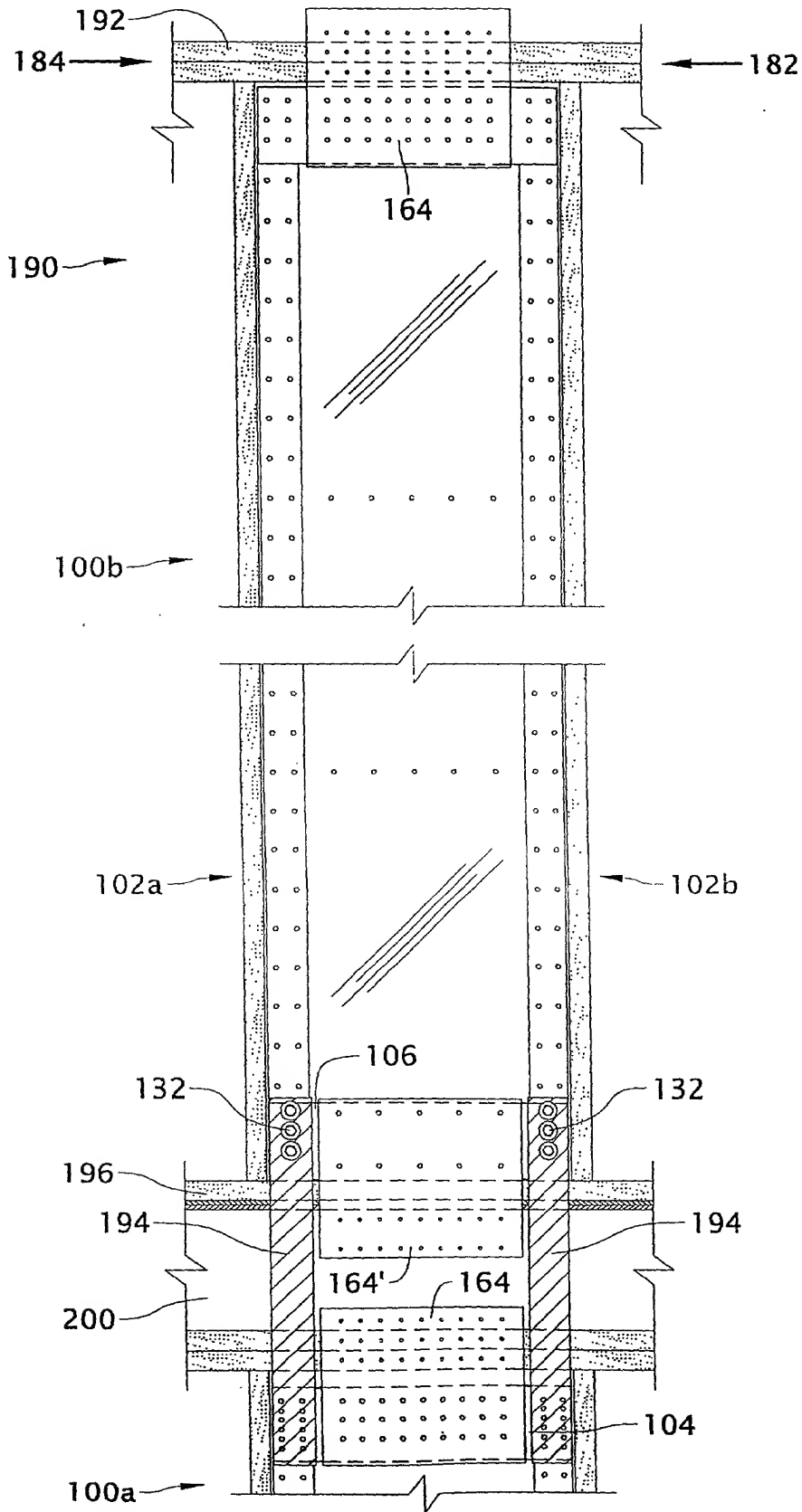


Fig. 7

DECLARATION AND POWER OF ATTORNEY - USA PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled PRE-ASSEMBLED INTERNAL SHEAR PANEL; the specification of which was filed on **December 14, 1995** as Application Serial No. **08/572,519**.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above;

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56;

POWER OF ATTORNEY: I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith (if this application is assigned, I acknowledge that the appointed individuals do not represent me, and that instead they represent the assignee): Louis J. Knobbe, Registration No. 18,780; Don W. Martens, Registration No. 21,107; Gordon H. Olson, Registration No. 20,319; James B. Bear, Registration No. 25,221; Darrell L. Olson, Registration No. 28,247; William B. Bunker, Registration No. 29,365; William H. Nieman, Registration No. 30,201; Lowell Anderson, Registration No. 30,990; Arthur S. Rose, Registration No. 28,038; James F. Lesniak, Registration No. 25,240; Ned A. Israelsen, Registration No. 29,655; Drew S. Hamilton, Registration No. 29,801; Jerry T. Sewell, Registration No. 31,567; John B. Sganga, Jr., Registration No. 31,302; Edward A. Schlatter, Registration No. 32,297; Gerard von Hoffmann, Registration No. 33,043; Joseph R. Re, Registration No. 31,291; John M. Carson, Registration No. 34,303; Andrew H. Simpson, Registration No. 31,469; Daniel E. Altman, Registration No. 34,115; Anita M. Kirkpatrick, Registration No. 32,617; Ernest A. Beutler, Registration No. 19,901; Vito A. Canuso, Registration No. 35,471; William H. Shreve, Registration No. 35,678; Stephen C. Jensen, Registration No. 35,556; Steven J. Nataupsky, Registration No. 37,688; Michael Fedrick, Registration No. 36,799; Michael H. Trenholm, Registration No. 37,743; AnneMarie Kaiser, Registration No. 37,649; Brenton R. Babcock, Registration No. 39,593; Edward J. Treska, Registration No. 37,744; Nancy Ways Vensko, Registration No. 36,298; Jonathan A. Barney, Registration No. 34,292; Ronald J. Schoenbaum, Registration No. 38,297; Richard C. Gilmore, Registration No. 37,335; John R. King, Registration No. 34,362; William S. Reimus, Registration No. 38,279; Stephen S. Korniczky, Registration No. 34,853; Frederick S. Berretta, Registration No. 38,004; Christopher A. Colvin, Registration No. 39,147; Glenn R. Smith, Registration No. 38,308; Stephen C. Beuerle, Registration No. 38,380; Robert F. Gazdzinski, Registration No. 39,900; Yasuo Muramatsu, Registration No. 38,684; Raimond J. Salenieks, Registration No. 37,924; Renée E. Canuso, Registration No. 36,657; Guy L.

Cumberbatch, Registration No. 36,114; Michael L. Fuller, Registration No. 36,516; Neil S. Bartfeld, Registration No. 39,901; Christine M. Jones, Registration No. 35,182; and E. Alan Walshe, Registration No. 40,214.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole inventor: Lee W. Mueller

Inventor's signature *Lee W. Mueller*

Date 21 MARCH, 1996

Residence: Apple Valley, CA

Citizenship: United States of America

Post Office Address: 17868 Highway 18, Suite 207, Apple Valley, CA 92307

Send Correspondence To:
KNOBBE, MARTENS, OLSON & BEAR
620 Newport Center Drive
Sixteenth Floor
Newport Beach, CA 92660-8016

Direct Telephone Calls To:
Michael H. Trenholm

(909) 781-9231

MHT-5387:lw
031996

Practitioner's Docket No. SST/1010

COPY 631839175
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

☒ **In re application of:** Lee W. Mueller
Application No.: 08 / 985,479 Group No.: 3621
Filed: December 5, 1997 Examiner:

For: PRE-ASSEMBLED INTERNAL SHEAR PANEL

☐ **Patent No.*:** **Issued:**

**NOTE: Insert name(s) of all inventor(s) and title also for patent.*

Assistant Commissioner for Patents
Washington, D.C. 20231

**POWER OF ATTORNEY BY INVENTOR(S)
(REVOCATION OF PRIOR POWERS)**

As a named inventor for the above identified

- ☒ application,
☐ patent,

REVOCATION OF PRIOR POWERS OF ATTORNEY

I hereby revoke all powers of attorney previously given and

NEW POWER OF ATTORNEY

I hereby appoint the following attorney(s) and/or agent(s) to prosecute and transact all business in the Patent and Trademark Office connected therewith.

(list name(s) and registration number(s))

Charles R. Cypher, Reg. No. 41,694
James R. Cypher, Reg. No. 22,448

(check the following item, if applicable)

- ☐ Attached as part of this power of attorney is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

(Power of Attorney by Inventor(s) [12-1]—page 2 of 3)

NOTE: *A power of attorney may be revoked at any stage in the prosecution of a case.*

- ☐ Added page(s) forming a part of this power of attorney
- ☐ Added page(s) for signature(s) by additional inventors
- ☐ Added page—Authorization of attorney(s) to accept and follow instructions from representative

(supply similar information and signature for fourth and subsequent inventors)